

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 27.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 402 640 837

Injection pump
Pump designation : PE12P120A320LS7807
EP type number : 0 412 620 806
Governor
Governor design. : RQ400/1065PA1024
Governor no. : 0 421 801 634

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 485.0
Rated speed : 2130

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1065

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0
Rack travel in mm : 4.8...5.4
Del.quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1065
Aneroid pressure h: 1000
Del.quantity : 211.0...213.0
1000 : (208.0...216.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90
Speed rpm : 1110...1125
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 300
Minimum rack travel: 6.90
Speed rpm : 400
Rack travel in mm : 4.80...5.40
Rack travel in mm : 2.00
Speed rpm : 460...500

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 10.80...11.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.50...11.70
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00

START CUT-OUT

Speed 1/min : 320 (340)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)

Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1110...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 q 1
 Edition : 20.03.92
 Replaces : 02.92
 Test oil : ISO-4113

Combination no. : 0 402 646 940

Injection pump
 Pump designation : PE6P120A320LS7836
 EP type number : 0 412 626 840
 Governor
 Governor design. : RQ300/950PA971-7
 Governor no. : 0 421 801 580

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.30...5.90
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm³/ : 203.0...206.0
1000 s: (200.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)

Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 45.0...75.0
1000 s: (41.0...79.0)
Rack travel in mm : 10.30...10.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 o 5
Edition : 27.03.92
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 0 402 646 955

Injection pump
Pump designation : PE6P120A32OLS7834-1
EP type number : 0 412 626 857
Governor
Governor design. : RQV350...1050PA866
-13
Governor no. : 0 421 813 954

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
Rack travel in mm : 14.60...14.80
Del. quantity cm³/ : 22.2...22.4
100 s: (21.9...22.7)
Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.1...5.7
Del. quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.40...1.60
4th speed rpm : 1200
travel mm : 8.50...9.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1130
Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del. quantity : 222.0...224.0
1000 : (219.0...227.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 13.70
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.10...5.70

CONSTANT REGULATION
Speed rpm : 350...600

TORQUE CONTROL
2nd speed rpm : 1050
Rack travel in m: 14.80...15.00
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.60...14.80

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.40...11.60
2nd pressure hPa : 600
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1350
Rack travel in m: 14.70...14.90 *
4th pressure hPa : -
Rack travel in m: 10.00...10.30

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1800
Speed rpm : 1050
Del.quantity cm³/ : 234.0...237.0
1000 s: (231.0...240.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm³/ : 241.0...245.0
1000 s: (238.0...248.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 1050
Del.quantity cm³/ : 175.0...179.0 *
1000 s: (172.0...182.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.70
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:

:

* = Set at reduced-delivery stop.

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 o 7
Edition : 27.03.92
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 402 646 961

Injection pump
Pump designation : PE6P120A320LS7834-1
EP type number : 0 412 626 857
Governor
Governor design. : RQV350...950PA866-14
Governor no. : 0 421 813 959

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.55)

Rack travel in mm : 20.00...21.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...6.2

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.30...1.80

2nd speed rpm : 424

travel mm : 2.30...2.80

3rd speed rpm : 700

travel mm : 4.10...4.60

4th speed rpm : 1008

travel mm : 7.90...8.40

5th speed rpm : 1220

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 985

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 209.0...211.0
1000 : (206.0...214.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 111...119

Testing:

1st rack travel in: 13.80
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.10...5.70

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.30...13.50

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 9.80...10.00
2nd pressure hPa : 550
Rack travel in m: 12.30...12.50
3rd pressure hPa : 1300
Rack travel in m: 13.70...13.90
4th pressure hPa : -
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 270 (290)

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FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 950
Del.quantity cm3/ : 228.0...231.0
1000 s: (225.0...234.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 230.0...234.0
1000 s: (227.0...237.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 950
Del.quantity cm3/ : 169.0...173.0 *
1000 s: (166.0...176.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 o 8
 Edition : 27.03.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 965
 Injection pump
 Pump designation : PE6P120A320LS7834-1
 EP type number : 0 412 626 857
 Governor
 Governor design. : RQV350...1050PA866
 -19
 Governor no. : 0 421 813 979
 Customer spec. information
 Customer : MERCEDES-BENZ
 Engine : OM401 LA, Euro 1
 1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 419 992 198
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.55)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 14.10...14.30
 Del. quantity cm³/ : 20.7...20.9
 100 s: (20.4...21.2)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.4...6.0
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80
 2nd speed rpm : 570
 travel mm : 3.30...3.80
 3rd speed rpm : 900
 travel mm : 5.40...5.90
 4th speed rpm : 1107
 travel mm : 7.80...8.30
 5th speed rpm : 1204
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1125
 Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 207.0...209.0
1000 : (204.0...212.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 13.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 200
Minimum rack trave: 7.60
Speed rpm : 350
Rack travel in mm : 5.40...6.00

CONSTANT REGULATION
Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.90...11.10
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1350
Rack travel in m: 14.40...14.60
4th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 225.0...228.0
1000 s: (222.0...231.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 169.0...173.0 *
1000 s: (166.0...176.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 r 5
 Edition : 27.03.92
 Replaces : 12.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 966
 Injection pump
 Pump designation : PE6P120A320LS7836-1
 EP type number : 0 412 626 860
 Governor
 Governor design. : RQV350...1050PA866
 -20
 Governor no. : 0 421 813 980
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM401 LA, Euro 1
 1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.55)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 12.40...12.60
 Del.quantity cm3/ : 18.2...18.4
 100 s: (17.9...18.7)
 Spread cm3 : 0.5
 100 s: (0.9)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.6...6.2
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm3 : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80
 2nd speed rpm : 570
 travel mm : 3.30...3.80
 3rd speed rpm : 900
 travel mm : 5.40...5.90
 4th speed rpm : 1107
 travel mm : 7.80...8.30
 5th speed rpm : 1204
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1125
 Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
 Aneroid pressure h: 800
 Del.quantity : 182.0...184.0
 1000 : (179.0...187.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
 position degrees: 115...123

Testing:

1st rack travel in: 12.10
 Speed rpm : 1090...1100
 2nd rack travel in: 4.00
 Speed rpm : 1180...1210
 4th rack travel in: 1300
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 63...71

Testing:

Speed rpm : 200
 Minimum rack travel: 7.30
 Speed rpm : 350
 Rack travel in mm : 5.10...5.70

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
 Compensator Test

1st version

Setting
 Speed rpm : 600
 Pressure hPa : 800
 Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 200
 Rack travel in m: 11.30...11.50
 2nd pressure hPa : 1000
 Rack travel in m: 12.60...12.80
 3rd pressure hPa : -
 Rack travel in m: 10.50...10.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
 Speed rpm : 1050
 Del.quantity cm3/ : 201.0...204.0
 1000 s: (198.0...207.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: 1600
 Speed rpm : 800
 Del.quantity cm3/ : 202.0...206.0
 1000 s: (199.0...209.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: 1600
 Speed rpm : 1050
 Del.quantity cm3/ : 149.0...153.0 *
 1000 s: (146.0...157.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm3/ : 132.0...134.0
 1000 s: (129.0...137.0)
 Spread cm3 : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 220.0...240.0
 1000 s: (216.0...244.0)

Remarks:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 27.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 402 646 968

Injection pump
Pump designation : PE6P120A320RS7248
EP type number : 0 412 626 861
Governor
Governor design. : RQV275...1150PA986
Governor no. : 0 421 813 920

Customer-spec. information
Customer : DAF

Engine : RS 222 L

1st version kW : 222.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 120...140

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 14.00...15.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 11.7...12.7
Difference * CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 18.4...18.6

100 s: (18.1...18.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.20...1.60

2nd speed rpm : 315

travel mm : 1.80...2.20

3rd speed rpm : 1205

travel mm : 8.10...8.50

4th speed rpm : 1340

travel mm : 9.70...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1315

Rack travel in mm : 10.90...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 184.0...186.0
1000 : (181.0...189.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 115...123

Testing:

1st rack travel in: 11.20
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 79...87

Testing:

Speed rpm : 175
Minimum rack travel: 6.30
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 315...365

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 9.30...9.50
2nd pressure hPa : 420
Rack travel in m: 11.60...11.70
3rd pressure hPa : 240
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm3/ : 120.0...122.0
1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1180...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 27.03.92
 Replaces : 02.92
 Test oil : ISO-4113

Combination no. : 0 402 646 969

Injection pump
 Pump designation : PE6P120A320RS7248Z
 EP type number : 0 412 626 862
 Governor
 Governor design. : RQV275...1150PA986
 Governor no. : 0 421 813 920

Customer spec. information
 Customer : DAF

Engine : RS 200 L

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 120...140

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 14.00...15.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 10.8...11.8

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm³/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.20...1.60

2nd speed rpm : 315

travel mm : 1.80...2.20

3rd speed rpm : 1205

travel mm : 8.10...8.50

4th speed rpm : 1340

travel mm : 9.70...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1335

Rack travel in mm : 9.00...11.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000
Del.quantity : 164.0...166.0
1000 : (161.0...169.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 10.30
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 79...87

Testing:
Speed rpm : 175
Minimum rack trave: 6.20
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 315...365

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.30...11.40

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 340
Rack travel in m: 10.70...10.80
3rd pressure hPa : 200
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600

Del.quantity cm3/ : 115.0...117.0
1000 s: (112.0...120.0)

BREAKAWAY

1st version
1mm rack travel Less than
full load rack tr: 10.30
Speed rpm : 1180...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 27.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 402 646 970

Injection pump
Pump designation : PE6P120A32ORS7248Y
EP type number : 0 412 626 863
Governor
Governor design. : RGV275...1150PA986
Governor no. : 0 421 813 920

Customer-spec. information
Customer : DAF

Engine : RS 180 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 120...140

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 14.00...15.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 10.2...11.2
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.70...10.80

Del.quantity cm³/ : 14.5...14.7

100 s: (14.2...15.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.3...5.5
Del.quantity cm³/ : 1.3...1.9
100 s: (1.0...2.2)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 1.20...1.60
2nd speed rpm : 315
travel mm : 1.80...2.20
3rd speed rpm : 1205
travel mm : 8.10...8.50
4th speed rpm : 1340
travel mm : 9.70...9.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1330
Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 145.5...147.5
1000 : (142.5...150.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 9.70
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 79...87

Testing:
Speed rpm : 175
Minimum rack travel: 6.20
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 315...365

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 250
Rack travel in m: 10.20...10.30
3rd pressure hPa : 140
Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600

Del.quantity cm³/ : 107.0...109.0
1000 s: (104.0...112.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1180...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 27.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 402 646 971

Injection pump
Pump designation : PE6P120A320RS7218Z
EP type number : 0 412 626 847
Governor
Governor design. : RQV275...1000PA939-2
Governor no. : 0 421 813 986

Customer spec. information
Customer : DAF

Engine : WS 242 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 95...115

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
 : (5.25...5.45)
Rack travel in mm : 14.00...15.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 13.5...14.5
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 6.1...6.3
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
travel mm : 7.70...8.20
2nd speed rpm : 275
travel mm : 1.10...1.60
3rd speed rpm : 380
travel mm : 2.40...2.90
4th speed rpm : 675
travel mm : 4.20...4.70
5th speed rpm : 1310
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1130
Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 205.0...207.0
1000 : (202.0...210.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 115...123

Testing:

1st rack travel in: 12.80
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 175
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 300...350

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 420

Rack travel in m: 13.30...13.40

3rd pressure hPa : 260

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm³/ : 147.0...149.0
1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 27.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 402 646 972

Injection pump
Pump designation : PE6P120A320RS7218
EP type number : 0 412 626 839
Governor
Governor design. : RQV275...1000PA939-2
Governor no. : 0 421 813 986

Customer-spec. information
Customer : DAF

Engine : WS 268 L

1st version kW : 268.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 95...115

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
 : (5.25...5.45)
Rack travel in mm : 14.30...15.30
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.80...14.90

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
travel mm : 7.70...8.20

2nd speed rpm : 275
travel mm : 1.10...1.60

3rd speed rpm : 380
travel mm : 2.40...2.90

4th speed rpm : 675
travel mm : 4.20...4.70

5th speed rpm : 1310
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION
Control-lever position

Degree: -1
Speed rpm : 1125
Rack travel in mm : 13.60...16.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.80
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 175
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 300...350

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.80...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.20...12.40
2nd pressure hPa : 490
Rack travel in m: 14.20...14.30
3rd pressure hPa : 280
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm³/ : 158.0...160.0
1000 s: (155.0...163.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 27.03.92
Replaces : 02.92
Test oil : ISO-4113
Combination no. : 0 402 646 973
Injection pump
Pump designation : PE6P120A32DRS7218Z
EP type number : 0 412 626 847
Governor
Governor design. : RQ275/1000PA936-2
Governor no. : 0 421 801 633

Customer-spec. information
Customer : DAF

Engine : WS 242 L

1st version kW : 268.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 14.00...15.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 13.5...14.55
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550
Rack travel in mm : 16.0

Testing:

1st rack travel in: 12.80
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.0

Testing:

Speed rpm : 175
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 14.80...14.90
2nd speed rpm : 1000
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 420
Rack travel in m: 13.30...13.40
3rd pressure hPa : 260
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600

Del.quantity cm³/ : 147.0...149.0
1000 s: (144.0...152.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 27.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 402 646 974

Injection pump
Pump designation : PE6Pi20A320RS7218
EP type number : 0 412 626 839
Governor
Governor design. : RQ275/1000PA936-2
Governor no. : 0 421 801 633

Customer-spec. information
Customer : DAF

Engine : WS 268 L

1st version kW : 268.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 95...115

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 14.50...15.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.80...14.90

Del.quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 6.1...6.3
Del.quantity cm³/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550
Rack travel in mm : 16.0

Testing:

1st rack travel in: 13.80
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.0

Testing:

Speed rpm : 175
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 15.30...15.40
2nd speed rpm : 1000
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.80...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.20...12.40
2nd pressure hPa : 490
Rack travel in m: 14.20...14.30
3rd pressure hPa : 280
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

A26

Aneroid pressure h: -

Speed rpm : 600
Del. quantity cm³/ : 158.0...160.0
1000 s: (155.0...163.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 13.03.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 984
 Injection pump
 Pump designation : PE6P120A320RS7248
 EP type number : 0 412 626 861
 Governor
 Governor design. : RQ275/1150PA987
 Governor no. : 0 421 801 578

Customer-spec. information
 Customer : DAF

Engine : RS 222 L

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 638 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness : 8.00X2.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 14.00...15.00

A27

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 11.7...12.7
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 18.4...18.6

100 s: (18.1...18.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 184.0...186.0

1000 : (181.0...189.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.20

Speed rpm : 1175...1190

2nd rack travel in: 4.00

Speed rpm : 1255...1285

4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 4.7

Testing:

Speed rpm : 100

Minimum rack travel: 6.20

Speed rpm : 275

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 13.20...13.30

2nd speed rpm : 1150

Rack travel in m: 13.10...13.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 9.50...9.70

2nd pressure hPa : 420

Rack travel in m: 11.60...11.70

3rd pressure hPa : 240

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del. quantity cm³/ : 120.0...122.0

1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1175...1190

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.60...4.80

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 985

Injection pump
Pump designation : PE6P120A320RS7248Z
EP type number : 0 412 626 862
Governor
Governor design. : RQ275/1150PA987
Governor no. : 0 421 801 578

Customer-spec. information
Customer : DAF

Engine : RS 200 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 14.00...15.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 10.8...11.8
Difference ° CS : 3.25...4.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm³/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.3...5.5
Del.quantity cm³/ : 1.3...1.9
100 s: (1.0...2.2)
Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 164.0...166.0
1000 : (161.0...169.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 550
Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.30
Speed rpm : 1175...1190
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 275
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.30...12.40
2nd speed rpm : 1150
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 340
Rack travel in m: 10.70...10.80
3rd pressure hPa : 200
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 115.0...117.0
1000 s: (112.0...120.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1175...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 986

Injection pump
Pump designation : PE6P120A320RS7248Y
EP type number : 0 412 626 863
Governor
Governor design. : RQ275/1150PA987
Governor no. : 0 421 801 578

Customer-spec. information
Customer : DAF

Engine : RS 180 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 14.00...15.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 10.2...11.2
Difference ° CS : 3.25...4.75

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 14.5...14.7
100 s: (14.2...15.0)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 1.3...1.9
100 s: (1.0...2.2)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 550
Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 145.5...147.5
1000 : (142.5...150.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 550
Rack travel in mm : 16.0

Testing:

1st rack travel in: 9.70
Speed rpm : 1175...1190
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 275
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 11.70...11.80
2nd speed rpm : 1150
Rack travel in m: 11.60...11.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 250
Rack travel in m: 10.20...10.30
3rd pressure hPa : 140
Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 107.0...109.0
1000 s: (104.0...113.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1175...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
Edition : 03.04.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402-646 990
Injection pump
Pump designation : PE6P130A720RS7225
EP type number : 0 412 636 817
Governor
Governor design. : RGV300...950PA975-2K
Governor no. : 0 421 815 310

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8210.42.369

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 11.50...12.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 25.2...25.4

100 s: (24.9...25.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.5

Del.quantity cm3/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
travel mm : 8.40...8.60

2nd speed rpm : 300
travel mm : 1.00...1.40

3rd speed rpm : 500
travel mm : 3.30...3.90

4th speed rpm : 700
travel mm : 5.40...5.80

5th speed rpm : 1400
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 1000

Del.quantity : 252.0...254.0

1000 : (249.0...257.0)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:

1st rack travel in: 10.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69

Testing:

Speed rpm : 100
Minimum rack travel: 5.80
Speed rpm : 300
Rack travel in mm : 4.20...4.40

CONSTANT REGULATION

Speed rpm : 340...460

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 11.90...12.00
2nd speed rpm : 350
Rack travel in m: 11.30...11.50
3rd speed rpm : 700
Rack travel in m: 11.90...12.00
4th speed rpm : 550
Rack travel in m: 11.70...11.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 950
Pressure hPa : 1000
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 950

1st pressure hPa : -
Rack travel in m: 9.50...9.70
2nd pressure hPa : 600
Rack travel in m: 10.80...10.90
3rd pressure hPa : 500

Rack travel in m: 10.00...10.20

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm³/ : 259.0...265.0
1000 s: (259.0...265.0)
Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm³/ : 261.0...267.0
1000 s: (258.0...270.0)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm³/ : 186.0...188.0
1000 s: (186.0...188.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.50
Del.quantity cm³/ : 19.0...25.0
1000 s: (15.0...29.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 991
Injection pump
Pump designation : PE6P120A320RS7218Y
EP type number : 0 412 626 859
Governor
Governor design. : RQV275...1000PA939-2
Governor no. : 0 421 813 986

Customer-spec. information
Customer : DAF

Engine : WS 222 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198
Inlet press., bar : 1.50
Test nozzle holder
assembly : 1 688 901 105
Opening
pressure, bar : 207...210
Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 14.00...15.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 13.2...14.2
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 19.5...19.7

100 s: (19.2...20.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

travel mm : 7.70...8.20

2nd speed rpm : 275

travel mm : 1.10...1.60

3rd speed rpm : 380

travel mm : 2.40...2.90

4th speed rpm : 675

travel mm : 4.20...4.70

5th speed rpm : 1310

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 11.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 195.0...197.0
1000 : (192.0...200.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 12.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 300...350

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.50...11.70
2nd pressure hPa : 400
Rack travel in m: 13.20...13.30
3rd pressure hPa : 230
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm³/ : 139.0...141.0
1000 s: (136.0...144.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 e 3
Edition : 27.03.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 402 648 831

Injection pump
Pump designation : PE8P120A320LS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RQV350...1050PA842-7
Governor no. : 0 421 813 874

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
Rack travel in mm : 14.50...14.70
Del.quantity cm3/ : 21.2...21.4
100 s: (20.9...21.7)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.7...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 0.80...1.20
2nd speed rpm : 510
travel mm : 3.60...4.10
3rd speed rpm : 1100
travel mm : 7.80...8.40
4th speed rpm : 1270
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1125
Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 750
Del.quantity : 212.0...214.0
1000 : (209.0...217.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 64...72

Testing:
1st rack travel in: 14.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 100
Minimum rack travel: 7.40
Speed rpm : 350
Rack travel in mm : 5.50...6.10

CONSTANT REGULATION
Speed rpm : 350...550

TORQUE CONTROL
Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 15.20...15.40
3rd speed rpm : 975
Rack travel in m: 15.60...15.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 750
Rack travel mm : 14.50...14.70

Measurement
Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 12.20...12.40
2nd pressure hPa : 550
Rack travel in m: 13.60...13.80
3rd pressure hPa : 900
Rack travel in m: 14.70...14.80

4th pressure hPa : 1250
Rack travel in m: 15.50...15.70
5th pressure hPa : -
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm3/ : 221.0...224.0
1000 s: (218.0...227.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1250
Speed rpm : 900
Del.quantity cm3/ : 233.0...237.0
1000 s: (230.0...240.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm3/ : 154.0...157.0
1000 s: (151.0...160.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 147.0...149.0
1000 s: (144.0...152.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
Edition : 22.11.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 874

Injection pump
Pump designation : PE8P120A920/4LS7189
EP type number : 0 412 628 840
Governor
Governor design. : RQV200...950PA736-8
Governor no. : 0 421 813 815

Customer-spec. information
Customer : SCANIA

Engine : DSC14 10

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 104

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
 6- 8

Phasing : 0-45-90-135-180-225-
 270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 23.7...23.9
100 s: (23.4...24.2)

Spread cm3 : 0.7
100 s: (1.0)

2nd speed rpm : 250.0
Rack travel in mm : 4.4...4.8
Del.quantity cm3/ : 1.2...1.6
100 s: (-)
Spread cm3 : 0.3
100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.40...1.80
2nd speed rpm : 350
travel mm : 2.30...2.90
3rd speed rpm : 650
travel mm : 4.40...5.00
4th speed rpm : 995
travel mm : 7.70...7.90
5th speed rpm : 1115
travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 237.0...239.0
1000 : (234.0...242.0)

Spread cm³ : 7.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 90...98

Testing:
1st rack travel in: 12.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 40...48

Testing:
Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 375...435

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 525
Rack travel in m: 11.70...11.80
3rd pressure hPa : 320
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 142.0...146.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 130.0...180.0
1000 s: (-)
Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.40...4.60

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o
Edition : 20.03.92
Replaces : 24.01.92
Test oil : ISO-4113

Combination no. : 0 402 648 893

Injection pump
Pump designation : PE8P120A320LS7835
EP type number : 0 412 628 847
Governor
Governor design. : RQ300/950PA971-2
Governor no. : 0 421 801 548

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1.50

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.2

Testing:

Speed rpm : 200

Minimum rack travel: 7.50

Speed rpm : 300

Rack travel in mm : 5.90...6.50

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50

2nd speed rpm : 950

Rack travel in m: 13.90...14.10

3rd speed rpm : 800

Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 250

Rack travel in m: 10.30...10.50

2nd pressure hPa : 650

Rack travel in m: 13.10...13.30

3rd pressure hPa : 8120

Rack travel in m: 14.20...14.40 *

4th pressure hPa : -

Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 950

Del.quantity cm3/ : 216.0...219.0

1000 s: (213.0...222.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 750

Del.quantity cm3/ : 234.0...238.0

1000 s: (231.0...241.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 132.0...134.0

1000 s: (129.0...137.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 40.0...70.0

1000 s: (36.0...74.0)

Rack travel in mm : 10.10...10.40

Speed rpm : 100

Del.quantity cm3/ : 210...230 **

1000 s: (200...240)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

** Value only applies to governor with
no TAS

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o 1
Edition : 20.03.92
Replaces : 01.92
Test oil : ISO-4113

Combination no. : 0 402 648 894

Injection pump
Pump designation : PE8P120A320LS7835
EP type number : 0 412 628 847
Governor
Governor design. : RQV300...950PA797-18
Governor no. : 0 421 813 886

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 638 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
(5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
Rack travel in mm : 14.10...14.30
Del. quantity cm³/ : 22.5...22.7
100 s: (22.2...23.0)
Spread cm³ : 0.6
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.5
Del. quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50
2nd speed rpm : 567
travel mm : 4.40...4.90
3rd speed rpm : 780
travel mm : 6.10...6.60
4th speed rpm : 1009
travel mm : 8.30...8.80
5th speed rpm : 1092
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 980
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 122...130

Testing:

1st rack travel in: 12.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION

Speed rpm : 250...360

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.30...10.50
2nd pressure hPa : 650
Rack travel in m: 13.10...13.30

3rd pressure hPa : 1200

Rack travel in m: 14.20...14.40 *

4th pressure hPa : -

Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 950
Del.quantity cm3/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 750
Del.quantity cm3/ : 234.0...238.0
1000 s: (231.0...241.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o 2
Edition : 20.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 402 648 895

Injection pump
Pump designation : PE8P120A320LS7835
EP type number : 0 412 628 847
Governor
Governor design. : RQ300/1050PA972-1
Governor no. : 0 421 801 545

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
Rack travel in mm : 14.20...14.40
Del. quantity cm³/ : 22.5...22.7
100 s: (22.2...23.0)

Spread cm³ : 0.6
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.2...6.8
Del. quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del. quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00

Speed rpm : 1090...1105

2nd rack travel in: 4.00

Speed rpm : 1170...1200

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 200

Minimum rack travel: 7.80

Speed rpm : 300

Rack travel in mm : 6.20...6.80

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50

2nd speed rpm : 1050

Rack travel in m: 14.00...14.20

3rd speed rpm : 800

Rack travel in m: 14.60...14.80

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 14.20...14.40

Measurement

Speed 1/min : 600

1st pressure hPa : 250

Rack travel in m: 10.40...10.60

2nd pressure hPa : 650

Rack travel in m: 13.20...13.40

3rd pressure hPa : 1200

Rack travel in m: 14.30...14.40 *

4th pressure hPa : -

Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 1050

Del.quantity cm3/ : 214.0...217.0

1000 s: (211.0...220.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 800

Del.quantity cm3/ : 232.0...236.0

1000 s: (229.0...239.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 132.0...134.0

1000 s: (129.0...137.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 30.0...70.0

1000 s: (26.0...74.0)

Rack travel in mm : 10.10...10.50

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 f
Edition : 13.03.92
Replaces : 07.91
Test oil : ISO-4113

Combination no. : 0 402 648 912

Injection pump
Pump designation : PE8P130A920/5LS7841
EP type number : 0 412 638 803
Governor
Governor design. : RQV300...950PA994K
Governor no. : 0 421 815 275

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8280.42.050

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 11.50...12.50

Firing order : 1- 8- 4- 3- 6- 5-
7- 2

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 11.50...12.50
& maximum rack tra: 19,9...20,1
Difference * CS : 1.25...2.75

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 10.50...10.60

Del.quantity cm³/ : 21.8...22.0

100 s: (21.5...22.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 3.8...4.2
Del.quantity cm³/ : 2.2...2.8
100 s: (1.9...3.1)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
travel mm : 10.20...10.40
2nd speed rpm : 300
travel mm : 2.00...2.30
3rd speed rpm : 700
travel mm : 5.80...6.20
4th speed rpm : 1200
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1000
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950
Aneroid pressure h: 900
Del.quantity : 218.0...220.0
1000 : (215.0...223.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 9.50
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1035...1065
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 58...66

Testing:
Speed rpm : 200
Minimum rack travel: 5.50
Speed rpm : 300
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION
Speed rpm : 310...440

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 10.50...10.60
2nd speed rpm : 400
Rack travel in m: 9.90...10.10
3rd speed rpm : 550
Rack travel in m: 10.10...10.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 950
Pressure hPa : 900
Rack travel mm : 10.50...10.60

Measurement
Speed 1/min : 950

1st pressure hPa : -
Rack travel in m: 8.20...8.40
2nd pressure hPa : 300

Rack travel in m: 9.90...10.00
3rd pressure hPa : 230
Rack travel in m: 8.80...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...147.0
1000 s: (140.5...150.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.50
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...170.0
1000 s: (136.0...174.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.80...4.20
Del.quantity cm3/ : 22.0...28.0
1000 s: (19.0...31.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 f1
 Edition : 20.03.92
 Replaces : 07.91
 Test oil : ISO-4113
 Combination no. : 0 402 648 913
 Injection pump
 Pump designation : PE8P130A920/5LS7841
 EP type number : 0 412 638 803
 Governor
 Governor design. : RQV300...950PA994-1K
 Governor no. : 0 421 815 276

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8280.42.350 SPR

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 40...45

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 11.50...12.50

Firing order : 1- 8- 4- 3- 6- 5-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 11.5...12.5
 & maximum rack tra: 19.9...20.1
 Difference ° CS : 1.25...2.75

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 11.30...11.40

Del.quantity cm³/ : 24.8...25.0

100 s: (24.5...25.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.0...4.4
 Del.quantity cm³/ : 2.2...2.8
 100 s: (1.9...3.1)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 10.20...10.40
 2nd speed rpm : 300
 travel mm : 2.00...2.30
 3rd speed rpm : 700
 travel mm : 5.80...6.20
 4th speed rpm : 1200
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1040
 Rack travel in mm : 9.00...11.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950
Aneroid pressure h : 900
Del.quantity : 248.0...250.0
1000 : (245.0...253.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 10.30
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1040...1070
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 58...66

Testing:
Speed rpm : 200
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION
Speed rpm : 310...440

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 11.30...11.40
2nd speed rpm : 800
Rack travel in m: 11.20...11.40
3rd speed rpm : 650
Rack travel in m: 11.00...11.30
4th speed rpm : 400
Rack travel in m: 10.40...10.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 950
Pressure hPa : 900
Rack travel mm : 11.30...11.40

Measurement
Speed 1/min : 950

1st pressure hPa : -

B22

Rack travel in m: 7.60...7.80
2nd pressure hPa : 450
Rack travel in m: 10.60...10.70
3rd pressure hPa : 280
Rack travel in m: 8.70...9.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.00...4.40
Del.quantity cm3/ : 22.0...28.0
1000 s: (19.0...31.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o 3
 Edition : 20.03.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 914
 Injection pump
 Pump designation : PE8P120A320LS7835
 EP type number : 0 412 628 847
 Governor
 Governor design. : RQV300...1050PA797
 -30
 Governor no. : 0 421 813 921

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.80...15.00

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.2...6.8
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm3 : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.50...1.00
 2nd speed rpm : 625
 travel mm : 4.80...5.30
 3rd speed rpm : 830
 travel mm : 5.90...6.40
 4th speed rpm : 1108
 travel mm : 8.10...8.60
 5th speed rpm : 1190
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.30
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.80

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 14.30...14.50
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.80...15.00

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 11.00...11.20
2nd pressure hPa : 650

Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 14.90...15.00 *
4th pressure hPa : -
Rack travel in m: 9.30...9.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 232.0...236.0
1000 s: (229.0...239.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o 4
Edition : 20.03.92
Replaces : 01.92
Test oil : ISO-4113

Combination no. : 0 402 648 915

Injection pump
Pump designation : PE8P120A320LS7335
EP type number : 0 412 628 847
Governor
Governor design. : RQ300/1050PA993-1
Governor no. : 0 421 801 582

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
(5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.80...15.00

Del. quantity cm³/ : 22.5...22.7
100 s: (22.2...23.0)

Spread cm³ : 0.6
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.2...6.8
Del. quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del. quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm³ : 6.00
1000 : (5.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.70
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 14.70...14.90
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.80...15.00

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 11.00...11.20
2nd pressure hPa : 650
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 14.90...15.00 *
4th pressure hPa : -
Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

B26

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 232.0...236.0
1000 s: (229.0...239.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 p
Edition : 27.03.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 402 648 922

Injection pump
Pump designation : PE8P120A32DLS7845
EP type number : 0 412 628 861
Governor
Governor design. : RQV350...1050PA866
-15
Governor no. : 0 421 813 960

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del. quantity cm³/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.4

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.30...1.80

2nd speed rpm : 570
travel mm : 3.30...3.80

3rd speed rpm : 900
travel mm : 5.40...5.90

4th speed rpm : 1107
travel mm : 7.80...8.30

5th speed rpm : 1204
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
 Aneroid pressure h: 900
 Del.quantity : 225.0...227.0
 1000 : (222.0...230.0)
 Spread cm3 : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
 position degrees: 118...126

Testing:

1st rack travel in: 12.80
 Speed rpm : 1090...1100
 2nd rack travel in: 4.00
 Speed rpm : 1170...1200
 4th rack travel in: 1250
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 62...70

Testing:

Speed rpm : 200
 Minimum rack trave: 7.40
 Speed rpm : 350
 Rack travel in mm : 4.80...5.40

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 0.20
 2nd speed rpm : 1050
 Rack travel in m: 13.80...14.00
 3rd speed rpm : 800
 Rack travel in m: 14.40...14.60

Aneroid/Altitude

Compensator Test

1st version

Setting
 Speed rpm : 600
 Pressure hPa : 900
 Rack travel mm : 14.30...14.50

Measurement

Speed 1/min : 600

1st pressure hPa : 300
 Rack travel in m: 10.30...10.50
 2nd pressure hPa : 600

Rack travel in m: 13.00...13.20
 3rd pressure hPa : 1100
 Rack travel in m: 14.40...14.50 *
 4th pressure hPa : -
 Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
 Speed rpm : 1050
 Del.quantity cm3/ : 214.0...217.0
 1000 s: (211.0...220.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: 1500
 Speed rpm : 800
 Del.quantity cm3/ : 232.0...236.0
 1000 s: (229.0...239.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: 1500
 Speed rpm : 1050
 Del.quantity cm3/ : 162.0...166.0 *
 1000 s: (159.0...169.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm3/ : 132.0...134.0
 1000 s: (129.0...137.0)
 Spread cm3 : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80
 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 230.0...250.0
 1000 s: (226.0...254.0)

Remarks:

:

* Increase in control-rod travel with
 respect to setting at least 0.1 mm

* = Set at reduced-delivery stop.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 27.03.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 648 934
Injection pump
Pump designation : PE8P120A320LS7823
EP type number : 0 412 628 835
Governor
Governor design. : RQV350...1050PA866
-21
Governor no. : 0 421 813 996

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.0...5.6
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.40...1.60
2nd speed rpm : 800
travel mm : 4.70...5.10
3rd speed rpm : 1100
travel mm : 7.60...8.20
4th speed rpm : 1175
travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 234.0...237.0
1000 : (231.0...240.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 115...123

Testing:

1st rack travel in: 13.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack travel: 7.10
Speed rpm : 350
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 14.40...14.60
3rd speed rpm : 800
Rack travel in m: 15.30...15.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050

Rack travel in m: 13.70...13.90 *
4th pressure hPa : 1250
Rack travel in m: 14.50...14.70
5th pressure hPa : -
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm³/ : 252.0...256.0
1000 s: (249.0...259.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm³/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm³/ : 184.0...187.0 *
1000 s: (181.0...190.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

* = Set at reduced-delivery stop.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 20.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 735 807

Injection pump
Pump designation : PES5P120A720/3LS7250
EP type number : 0 412 725 809
Governor
Governor design. : RQV325...1000PA960-9
K
Governor no. : 0 421 815 309

Customer-spec. information
Customer : MAN

Engine : D2865LF06/LU06

1st version kW : 235.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
& maximum rack tra: 15.0...16.0
Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 26.0...26.2

100 s: (25.7...26.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 5.9...6.3
Del.quantity cm³/ : 4.7...5.3
100 s: (4.4...5.6)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1060
travel mm : 10.40...10.60
2nd speed rpm : 300
travel mm : 1.90...2.10
3rd speed rpm : 450
travel mm : 3.40...4.00
4th speed rpm : 750
travel mm : 6.80...7.20
5th speed rpm : 1350
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1115

Rack travel in mm : 10.90...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 260.0...262.0
1000 : (257.0...265.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 296...304

Testing:

1st rack travel in: 12.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 253...261

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 325
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 270...340

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.50...13.60
2nd speed rpm : 1000
Rack travel in m: 13.10...13.30
3rd speed rpm : 650
Rack travel in m: 12.70...12.90
4th speed rpm : 400
Rack travel in m: 11.90...12.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 170

Rack travel in m: 9.60...9.70

3rd pressure hPa : 600

Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 248.0...254.0
1000 s: (245.0...257.0)
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 270.0...276.0
1000 s: (267.0...279.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.90...6.30
Del.quantity cm³/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7203

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w 2
Edition : 13.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 402 736 811

Injection pump
Pump designation : PES6P110A12ORS7213
EP type number : 0 412 716 804
Governor
Governor design. : RQV400...1250PA964-3
K
Governor no. : 0 421 815 255

Customer-spec. information
Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 147.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 115...125

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
: (4.30...4.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm³/ : 15.8...16.0
100 s: (15.5...16.3)

Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 400.0
Rack travel in mm : 5.5...5.7
Del.quantity cm³/ : 3.2...3.8
100 s: (3.0...4.0)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400
travel mm : 1.60...1.80
2nd speed rpm : 600
travel mm : 2.80...3.30
3rd speed rpm : 1300
travel mm : 7.20...7.40
4th speed rpm : 1500
travel mm : 8.90...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 1200
Del.quantity : 158.5...160.5
1000 : (155.5...163.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 56...64

Testing:

1st rack travel in: 13.80

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1460...1490

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 12...20

Testing:

Speed rpm : 275

Minimum rack travel: 7.20

Speed rpm : 400

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.80...14.90

2nd speed rpm : 800

Rack travel in m: 13.20...13.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1250

Pressure hPa : 1200

Rack travel mm : 14.80...14.90

Measurement

Speed 1/min : 1250

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 365

Rack travel in m: 10.60...10.70

3rd pressure hPa : 690

Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 800

Del.quantity cm³/ : 156.5...162.5

1000 s: (153.5...165.5)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 90.0...94.0

1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 11.90...12.90

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.50...5.70

Del.quantity cm³/ : 32.0...38.0

1000 s: (30.0...40.0)

Spread cm³ : 8.00

1000 s: (12.00)

Remarks:

: C.D.C. # 3918321

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 h
Edition : 03.04.92
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 402 746 883

Injection pump
Pump designation : PES6P110A320RS7198
EP type number : 0 412 716 802
Governor
Governor design. : RQV275...1250PA942K
Governor no. : 0 421 815 234

Customer-spec. information
Customer : RVI

Engine : MIDR06-06-26

1st version kW : 132.5
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70
: (4.55...4.75)
Rack travel in mm : 12.50...13.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.10...15.10
& maximum rack tra: 20.0...21.0
Difference ° CS : 2.50...4.00

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.60...14.70

Del.quantity cm3/ : 15.7...15.9

100 s: (15.4...16.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.3

Del.quantity cm3/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1300

travel mm : 9.50...9.70

2nd speed rpm : 275

travel mm : 0.90...1.10

3rd speed rpm : 550

travel mm : 3.80...4.20

4th speed rpm : 1000

travel mm : 7.10...7.50

5th speed rpm : 1600

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1385

Rack travel in mm : 12.30...14.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250
Aneroid pressure h: 1000
Del.quantity : 157.0...159.0
1000 : (154.5...161.5)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 110...118

Testing:

1st rack travel in: 13.60
Speed rpm : 1315...1325
2nd rack travel in: 4.00
Speed rpm : 1475...1505
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 58...66

Testing:

Speed rpm : 200
Minimum rack travel: 5.70
Speed rpm : 275
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 350...480

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 14.60...14.70
2nd speed rpm : 750
Rack travel in m: 13.70...13.90
3rd speed rpm : 300
Rack travel in m: 12.90...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1250
Pressure hPa : 1000
Rack travel mm : 14.60...14.70

Measurement

Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 11.20...11.60

2nd pressure hPa : 360
Rack travel in m: 12.80...12.90
3rd pressure hPa : 220
Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 122.0...126.0
1000 s: (119.0...129.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 67.0...69.0
1000 s: (64.5...71.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.60
Speed rpm : 1315...1325

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 85.0...115.0
1000 s: (81.0...119.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.30
Del.quantity cm3/ : 17.0...22.0
1000 s: (14.5...24.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Note remarks

Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250
Aneroid pressure h: 1000
Del.quantity : 140.0...142.0
1000 : (137.5...144.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 272...280

Testing:

1st rack travel in: 12.00
Speed rpm : 1320...1330
2nd rack travel in: 4.00
Speed rpm : 1465...1495
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 218...226

Testing:

Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 350...480

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 13.00...13.10
2nd speed rpm : 650
Rack travel in m: 11.90...12.10
3rd speed rpm : 300
Rack travel in m: 11.20...11.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1250
Pressure hPa : 1000
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 435
Rack travel in m: 12.20...12.30
3rd pressure hPa : 250
Rack travel in m: 11.00...11.40

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm³/ : 124.5...128.5
1000 s: (124.5...128.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 79.0...81.0
1000 s: (76.5...83.5)
Spread cm³ : 10.00
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (96.0...124.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del.quantity cm³/ : 24.0...28.0
1000 s: (24.0...28.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 22.01.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 746 925
Injection pump
Pump designation : PES6P120A720LS7244
EP type number : 0 412 726 857
Governor
Governor design. : RQ750PA981-1
Governor no. : 0 421 801 622

Customer-spec. information
Customer : MAN

Engine : D2866 LXE

1st version kW : 300.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.70...4.80
: (4.65...4.85)
Rack travel in mm : 18.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.30...14.40

Del.quantity cm³/ : 33.9...34.1

100 s: (33.6...34.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.4...4.8
Del.quantity cm³/ : 2.0...2.6
100 s: (1.7...2.9)
Spread cm³ : 0.8
100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 339.0...341.0
1000 : (336.0...344.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: ?...0

Testing:
1st rack travel in: 13.30
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 788...801
4th rack travel in: 950
Speed rpm : 0.00...1.00

SET IDLE AUXILIARY SPRING
Rack travel in mm : 5.50

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 750...755

Remarks:

: MAN-NR. 3-7183

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 L 1
 Edition : 13.03.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 402 746 928
 Injection pump
 Pump designation : PES6P110A32ORS7243
 EP type number : 0 412 716 806
 Governor
 Governor design. : RQV275...1175PA942-3
 K
 Governor no. : 0 421 815 294

Customer-spec. information
 Customer : RVI

Engine : MIDRO6-06-26 M/2

1st version kW : 132.5
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.85...4.95
 : (4.80...5.00)
 Rack travel in mm : 13.00...14.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 13.40...13.50
 & maximum rack tra: 20.0...21.0
 Difference ° CS : 1.00...2.50

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 15.2...15.4

100 s: (14.9...15.6)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.2

Del.quantity cm³/ : 2.3...2.7

100 s: (2.3...2.7)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250
 travel mm : 9.10...9.30

2nd speed rpm : 275
 travel mm : 0.90...1.10

3rd speed rpm : 600
 travel mm : 4.20...4.60

4th speed rpm : 1000
 travel mm : 7.00...7.40

5th speed rpm : 1600
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175
Aneroid pressure h: 1000
Del.quantity : 152.0...154.0
1000 : (149.5...156.5)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 290...298

Testing:

1st rack travel in: 12.40
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 238...246

Testing:

Speed rpm : 200
Minimum rack travel: 6.20
Speed rpm : 275
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 350...480

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 13.40...13.50
2nd speed rpm : 700
Rack travel in m: 12.50...12.70
3rd speed rpm : 300
Rack travel in m: 11.70...12.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1175
Pressure hPa : 1000
Rack travel mm : 13.40...13.50

Measurement

C17

Speed 1/min : 1175

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 420

Rack travel in m: 11.65...11.75

3rd pressure hPa : 240

Rack travel in m: 10.60...10.80

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm3/ : 149.0...153.0
1000 s: (146.0...156.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 79.0...81.0
1000 s: (76.5...83.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0
1000 s: (96.0...124.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 23.0...27.0
1000 s: (23.0...27.0)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB6.11
 Edition : 27.03.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 403 246 031
 Injection pump
 Pump designation : PES6MW100/720RS1515
 EP type number : 0 413 206 013
 Governor
 Governor design. : RQV300...1300MW125-1
 Governor no. : 0 420 083 258

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 127.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 10.8...11.0

100 s: (10.6...11.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.00...8.40

2nd speed rpm : 960

travel mm : 5.40...5.60

3rd speed rpm : 600

travel mm : 3.20...3.80

4th speed rpm : 300

travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 11.40
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:
Speed rpm : 200
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 4.20...4.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.70...9.90

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 500
Rack travel in m: 12.00...12.20
3rd pressure hPa : 1000
Rack travel in m: 12.40...12.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 99.0...102.0
1000 s: (96.5...104.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 43.0...45.0
1000 s: (41.0...47.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 I 1
Edition : 27.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 403 246 032

Injection pump
Pump designation : PES6MW100/720RS1515
EP type number : 0 413 206 013
Governor
Governor design. : RQV300...1300MW125-2
Governor no. : 0 420 083 259

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 142.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
: (5.15...5.35)

Rack travel in mm : 21.00...0.00

C20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.40...12.50

Del.quantity cm³/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.00...8.40

2nd speed rpm : 960

travel mm : 5.40...5.60

3rd speed rpm : 600

travel mm : 3.20...3.80

4th speed rpm : 300

travel mm : 0.80...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1100

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 11.40
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:
Speed rpm : 200
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 4.20...4.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.60...9.80

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 500
Rack travel in m: 12.00...12.20
3rd pressure hPa : 1100
Rack travel in m: 12.40...12.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 750
Del.quantity cm3/ : 99.0...102.0
1000 s: (96.5...104.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 27.03.92
Replaces : 02.92
Test oil : ISO-4113
Combination no. : 0 403 246 033
Injection pump
Pump designation : PES6MW100/720RS1511
EP type number : 0 413 206 011
Governor
Governor design. : RGV300...1300MW125
Governor no. : 0 420 083 257

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 156.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
: (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.00...8.40

2nd speed rpm : 960

travel mm : 5.40...5.60

3rd speed rpm : 600

travel mm : 3.20...3.80

4th speed rpm : 300

travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1100

Del.quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 11.60
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1435...1465
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.2

Testing:
Speed rpm : 200
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 4.10...4.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel min : 7.10...7.20

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 8.80...9.00
2nd pressure hPa : 500
Rack travel in m: 10.10...10.30
3rd pressure hPa : 1100
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 750
Del.quantity cm3/ : 111.5...114.5
1000 s: (109.0...117.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 5,8 D
 Edition : 20.03.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 403 444 119
 Injection pump
 Pump designation : PES4MW100/320RS1199
 EP type number : 0 413 404 112
 Governor
 Governor design. : RQV300...1300MW110K
 Governor no. : 0 420 083 996

Customer-spec. information
 Customer : PERKINS

Engine : 110 TI

1st version kW : 82.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.30...3.40
 : (3.25...3.45)
 Rack travel in mm : 12.00...14.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.1...6.3
 Del.quantity cm3/ : 1.6...2.0
 100 s: (1.3...2.2)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 10.00...10.40
 2nd speed rpm : 900
 travel mm : 6.40...6.60
 3rd speed rpm : 480
 travel mm : 3.10...3.70
 4th speed rpm : 300
 travel mm : 1.40...1.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1380
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300
 Aneroid pressure h: 900
 Del.quantity : 124.0...126.0
 1000 : (122.0...128.0)

Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 330...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300
Rack travel in m: 13.00...13.10
2nd speed rpm : 800
Rack travel in m: 12.00...12.20
3rd speed rpm : 500
Rack travel in m: 10.30...10.50
4th speed rpm : 1000
Rack travel in m: 12.40...12.70
5th speed rpm : 400
Rack travel in m: 9.90...10.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1300
Pressure hPa : -
Rack travel mm : 9.60...9.70

Measurement

Speed 1/min : 1300

1st pressure hPa : 130

Rack travel in m: 9.80...9.90
2nd pressure hPa : 180
Rack travel in m: 10.80...11.10
3rd pressure hPa : 900
Rack travel in m: 13.00...13.10

START CUT-OUT

Speed 1/min : 240 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm³/ : 118.0...121.0
1000 s: (115.5...123.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 70.0...80.0
1000 s: (67.0...83.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery blocking 46.5°
before start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
 Edition : 20.03.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 403 444 135
 Injection pump
 Pump designation : PES4MW100/320RS1223
 EP type number : 0 413 404 119
 Governor
 Governor design. : RQV300...1100MW122-1
 K
 Governor no. : 0 420 083 990

Customer-spec. information
 Customer : VME

Engine : TD45E

1st version kW : 92.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 173...176

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 12.8...13.0

100 s: (12.6...13.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 2.8...3.2

100 s: (2.5...3.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145

travel mm : 10.00...10.40

2nd speed rpm : 800

travel mm : 6.10...6.30

3rd speed rpm : 500

travel mm : 3.40...4.00

4th speed rpm : 300

travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 750

Del.quantity : 128.0...130.0

1000 : (126.0...132.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 116...124

Testing:

1st rack travel in: 13.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.1

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.70...14.80
2nd speed rpm : 880
Rack travel in m: 15.00...15.10
3rd speed rpm : 550
Rack travel in m: 14.20...14.30
4th speed rpm : 750
Rack travel in m: 14.70...14.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : -
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 550

1st pressure hPa : 220
Rack travel in m: 13.10...13.20
2nd pressure hPa : 370
Rack travel in m: 13.60...13.90
3rd pressure hPa : 750
Rack travel in m: 14.20...14.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750

Speed rpm : 880
Del.quantity cm3/ : 135.5...138.5
1000 s: (133.0...141.0)
Spread cm3 : 5.50
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 86.0...88.0
1000 s: (84.0...90.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...155.0
1000 s: (142.0...158.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 28.0...32.0
1000 s: (25.5...34.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 20.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 403 444 137

Injection pump
Pump designation : PES4MW100/720RS1212
EP type number : 0 413 404 114
Governor
Governor design. : RQV300...1300MW50-23
Governor no. : 0 420 083 269

Customer-spec. information
Customer : MB-NFZ

Engine : OM364LA

1st version kW : 102.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 12.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.30...6.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.80...10.00

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 12.60...12.80
3rd pressure hPa : 700
Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm³/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 85.0...95.0
1000 s: (82.0...98.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 20.03.92
Replaces : 02.92
Test oil : ISO-4113
Combination no. : 0 403 444 138
Injection pump
Pump designation : PES4MW100/720RS1151
EP type number : 0 413 404 104
Governor
Governor design. : RQV300...1300MW50-27
Governor no. : 0 420 083 273

Customer-spec. information
Customer : MB-NFZ

Engine : OM364A

1st version kW : 79.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm³/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 9.80
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.30...6.50

TORQUE CONTROL
Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.80...10.90
2nd speed rpm : 600
Rack travel in m: 11.60...11.70
3rd speed rpm : 1000
Rack travel in m: 11.60...11.70
4th speed rpm : 1175
Rack travel in m: 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.70...9.80

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.70...10.90
2nd pressure hPa : 300
Rack travel in m: 11.30...11.50
3rd pressure hPa : 700
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

D03

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm³/ : 75.0...78.0
1000 s: (72.5...80.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 65
 Edition : 13.03.92
 Replaces : 03.91
 Test oil : ISO-4113
 Combination no. : 0 403 446 259
 Injection pump
 Pump designation : PES6MW100/720RS1131-1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RQV300...1300MW68-2
 Governor no. : 0 420 083 224

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 9.40...9.80

2nd speed rpm : 1350
 travel mm : 8.40...8.60

3rd speed rpm : 600
 travel mm : 3.90...4.50

4th speed rpm : 300
 travel mm : 0.80...1.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 13.40
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1480...1510
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.80...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.50...11.70
2nd pressure hPa : 400
Rack travel in m: 13.30...13.50
3rd pressure hPa : 1000
Rack travel in m: 14.40...14.50

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 106.5...109.5
1000 s: (104.0...112.0)
Spread cm3 : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 6,2 F
Edition : 03.04.92
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 403 446 281

Injection pump
Pump designation : PES6MW100/720RS1217
EP type number : 0 413 406 207
Governor
Governor design. : RQ300/1000MW116
Governor no. : 0 420 082 056

Customer-spec. information
Customer : MWM

Engine : TBD226B-6

1st version kW : 150.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)

Rack travel in mm : 9.00...12.00

D06

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.2

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 7.30...7.70

2nd speed rpm : 1000

travel mm : 5.90...6.10

3rd speed rpm : 370

travel mm : 4.70...5.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 91...99

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.50
Speed rpm : 1040...1055
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.1

Testing:
Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 7.00...7.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.80...8.90

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.50...9.70
2nd pressure hPa : 650
Rack travel in m: 11.60...11.80
3rd pressure hPa : 1200
Rack travel in m: 12.50...12.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 750

Del.quantity cm3/ : 143.5...146.5
1000 s: (141.0...149.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 64.0...66.0
1000 s: (62.0...68.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1040...1055

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 95.0...105.0
1000 s: (92.0...108.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.00...7.20
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 J 1
Edition : 13.03.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 403 446 291

Injection pump
Pump designation : PES6MM100/320RS1214
EP type number : 0 413 406 204
Governor
Governor design. : RQV275...1250MW115-1
K
Governor no. : 0 420 083 992

Customer-spec. information
Customer : RVI

Engine : MIDR D60226 V

1st version kw : 129.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 16.50...19.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 5.80...6.20

Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1330
travel mm : 9.80...10.20

2nd speed rpm : 950
travel mm : 6.90...7.10

3rd speed rpm : 550
travel mm : 3.60...4.20

4th speed rpm : 275
travel mm : 0.80...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1000

Del.quantity : 103.0...105.0

1000 : (101.0...107.0)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 298...306

Testing:
1st rack travel in: 11.80
Speed rpm : 1320...1340
2nd rack travel in: 4.00
Speed rpm : 1460...1500
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 238...246
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 7.1

Testing:
Speed rpm : 200
Minimum rack travel: 6.10
Speed rpm : 275
Rack travel in mm : 5.50...5.90

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 11.90...12.00
3rd speed rpm : 1000
Rack travel in m: 12.30...12.50
4th speed rpm : 500
Rack travel in m: 11.50...11.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1000
Rack travel mm : 12.80...12.90

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 180
Rack travel in m: 12.30...12.60
3rd pressure hPa : 140
Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm³/ : 98.5...101.5
 1000 s: (96.0...104.0)
Spread cm³ : 5.00
 1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 1250
Del.quantity cm³/ : 89.0...91.0
 1000 s: (87.0...93.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1320...1340

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 88.0...112.0
 1000 s: (85.0...115.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.80...6.20
Del.quantity cm³/ : 20.0...24.0
 1000 s: (17.5...26.5)
Spread cm³ : 3.50
 1000 s: (5.00)

Remarks:

:
Set start-of-delivery sensor with
prestroke = 4.20...4.30 mm at
cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 20.03.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 298
Injection pump
Pump designation : PES6MW100/320RS1198
EP type number : 0 413 406 188
Governor
Governor design. : RQV350...1200MW46-44
Governor no. : 0 420 083 265

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 157.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.50...11.60

Del.quantity cm³/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.3...5.5
Del.quantity cm³/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
travel mm : 9.80...10.20
2nd speed rpm : 1250
travel mm : 7.90...8.10
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Aneroid pressure h: 900
Del.quantity : 122.0...124.0
1000 : (120.0...126.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 102...110

Testing:
1st rack travel in: 10.50
Speed rpm : 1270...1290
2nd rack travel in: 4.00
Speed rpm : 1395...1405
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.4

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.50...11.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.70
2nd pressure hPa : 215
Rack travel in m: 10.00...10.10
3rd pressure hPa : 380
Rack travel in m: 10.70...11.10

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1200
Del.quantity cm³/ : 118.5...122.5
1000 s: (116.5...124.5)

Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 83.0...85.0
1000 s: (81.0...87.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 12.50...13.50

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
: IHC #1819326C91
Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.

In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 A 1
Edition : 13.03.92
Replaces : 01.92
Test oil : ISO-4113

Combination no. : 0 403 446 299

Injection pump
Pump designation : PES6MW100/720RS1144
EP type number : 0 413 406 138
Governor
Governor design. : RGV300...1200MM69-3
Governor no. : 0 420 083 266

Customer-spec. information
Customer : MB-NFZ

Engine : OM366A

1st version kW : 116.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness : 8.00x2.50x600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 8.80...9.20

2nd speed rpm : 1000

travel mm : 6.70...6.90

3rd speed rpm : 500

travel mm : 4.20...4.80

4th speed rpm : 300

travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1240

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 112...120

Testing:

1st rack travel in: 10.10
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1315...1345
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.0

Testing:

Speed rpm : 200
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 7.90...8.10

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 11.10...11.20
2nd speed rpm : 750
Rack travel in m: 11.70...11.90
3rd speed rpm : 600
Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 70.5...73.5
1000 s: (68.0...76.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.90...8.10
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 S 5
Edition : 13.03.92
Replaces : 01.92
Test oil : ISO-4113

Combination no. : 0 403 446 300

Injection pump
Pump designation : PES6MW100/320RS1171
EP type number : 0 413 406 156
Governor
Governor design. : RQV300...1300MW80-7
Governor no. : 0 420 083 267

Customer-spec. information
Customer : RVI

Engine : MIDS 060212B

1st version kW : 117.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.40...5.80

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1480
travel mm : 9.60...10.00

2nd speed rpm : 1350
travel mm : 8.70...8.90

3rd speed rpm : 500
travel mm : 3.30...3.90

4th speed rpm : 300
travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1300
Aneroid pressure h: 700
Del.quantity : 88.0...90.0
1000 : (86.0...92.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 116...124

Testing:

1st rack travel in: 9.80
Speed rpm : 1395...1405
2nd rack travel in: 4.00
Speed rpm : 1485...1515
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.80...10.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.40
2nd pressure hPa : 180
Rack travel in m: 10.35...10.45
3rd pressure hPa : 120
Rack travel in m: 9.70...9.90

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1395...1405

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (87.0...113.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.40...5.80
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark made with
prestroke 3.00...3.10 mm at barrel 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 B 12
 Edition : 13.03.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 403 446 301
 Injection pump
 Pump designation : PES6MW100/720RS1131--
 1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RQV300...1300MW50-22
 Governor no. : 0 420 083 268

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 039

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 9.40...9.80

2nd speed rpm : 1350
 travel mm : 8.50...8.70

3rd speed rpm : 450
 travel mm : 2.60...3.20

4th speed rpm : 300
 travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 13.40
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1470...1500
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.80...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.10...11.30
2nd pressure hPa : 500
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1000
Rack travel in m: 14.40...14.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 106.5...109.5
1000 s: (104.0...112.0)
Spread cm3 : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 13.03.92
Replaces : 02.92
Test oil : ISO-4113
Combination no. : 0 403 446 302
Injection pump
Pump designation : PES6MW100/72ORS1131
EP type number : 0 413 406 123
Governor
Governor design. : RQV300...1300MW50-24
Governor no. : 0 420 083 270

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 715 089

Outside diameter
x Wall thickness : 8.00X2.50X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 8.8...9.0

100 s : (8.6...9.2)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del. quantity cm³/ : 1.0...1.4

100 s : (0.7...1.6)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:

1st rack travel in: 9.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.10...6.30

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.90...11.00
2nd speed rpm : 750
Rack travel in m: 11.60...11.70
3rd speed rpm : 1100
Rack travel in m: 11.10...11.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.80...9.90

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.20...10.30
2nd pressure hPa : 400
Rack travel in m: 11.00...11.30
3rd pressure hPa : 700
Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

D19

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 13.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 403 446 303

Injection pump
Pump designation : PES6MW100/720RS1131-1
EP type number : 0 413 406 165
Governor
Governor design. : RGV300...1300MW50-25
Governor no. : 0 420 083 271

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 155.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 12.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.20...11.30
2nd pressure hPa : 350
Rack travel in m: 12.40...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.10...13.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 87.0...91.0
1000 s: (85.0...93.0)
Spread cm3 : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 13.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 403 446 304

Injection pump
Pump designation : PES6MW100/720RS1131
EP type number : 0 413 406 123
Governor
Governor design. : RQV300...1200MW50-26
Governor no. : 0 420 083 272

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 115.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 715 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 7.40...7.80

2nd speed rpm : 880

travel mm : 4.90...5.10

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:
1st rack travel in: 9.30
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1325...1355
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.60...5.80

TORQUE CONTROL
Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.30...10.40
2nd speed rpm : 600
Rack travel in m: 11.00...11.20
3rd speed rpm : 1100
Rack travel in m: 10.30...10.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.70...8.80

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 9.00...9.10
2nd pressure hPa : 350
Rack travel in m: 10.20...10.50
3rd pressure hPa : 700
Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

D23

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 78.0...81.0
1000 s: (75.5...83.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 44.0...46.0
1000 s: (42.0...48.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.30
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 20.03.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 305
Injection pump
Pump designation : PES6MM100/320RS1204
EP type number : 0 413 406 192
Governor
Governor design. : RGV350...1350MW/6-45
Governor no. : 0 420 083 275

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-360

1st version kW : 112.0
Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
travel mm : 8.20...8.60

2nd speed rpm : 1350
travel mm : 7.40...7.60

3rd speed rpm : 500
travel mm : 2.50...3.10

4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1350
Aneroid pressure h: 900
Del.quantity : 87.5...89.5
1000 : (85.5...91.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 104...112

Testing:

1st rack travel in: 8.20
Speed rpm : 1425...1455
2nd rack travel in: 4.00
Speed rpm : 1510...1520
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.90...8.10
2nd pressure hPa : 175
Rack travel in m: 8.30...8.40
3rd pressure hPa : 300
Rack travel in m: 8.70...9.10

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 54.5...58.5
1000 s: (52.5...60.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.20
Speed rpm : 1425...1455

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: IHC #1819541C91

In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 20.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 446 306

Injection pump
Pump designation : PES6MW100/720RS1131
EP type number : 0 413 406 123
Governor
Governor design. : RGV300...1300MW67-6
Governor no. : 0 420 083 274

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 715 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.50...10.60

Del.quantity cm³/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 9.50

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1440...1470

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.60...5.80

TORQUE CONTROL

Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.50...10.60
2nd speed rpm : 850
Rack travel in m: 11.20...11.40
3rd speed rpm : 1100
Rack travel in m: 10.70...10.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.70...9.90
2nd pressure hPa : 400
Rack travel in m: 10.50...10.70
3rd pressure hPa : 700
Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 850
Del.quantity cm³/ : 88.0...91.0
1000 s: (85.5...93.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 80.0...90.0
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 27.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 446 307

Injection pump
Pump designation : PES6MW100/320RS1198
EP type number : 0 413 406 188
Governor
Governor design. : RQV350...1200MW46-46
Governor no. : 0 420 083 276

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 157.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.80...10.20

2nd speed rpm : 1250

travel mm : 7.90...8.10

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1200

Del.quantity : 122.0...124.0

1000 : (120.0...126.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever
position degrees: 102...110

Testing:
1st rack travel in: 10.50
Speed rpm : 1270...1290
2nd rack travel in: 4.00
Speed rpm : 1395...1405
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LCW IDLE 1
Control Lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.4

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 11.50...11.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...8.90
2nd pressure hPa : 200
Rack travel in m: 9.50...9.60
3rd pressure hPa : 460
Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm3/ : 118.5...122.5
1000 s: (116.5...124.5)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 70.0...72.0
1000 s: (68.0...74.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 12.50...13.50

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: IHC #1819485C91
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 D 1
Edition : 23.10.91
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 403 456 116

Injection pump
Pump designation : PES6MW100/321RS1215
EP type number : 0 413 406 205
Governor
Governor design. : RQ250/1200MW84-7
Governor no. : 0 420 082 055

Customer-spec. information
Customer : MAN

Engine : D 0826 LF 04

1st version kW : 199.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 16.3...16.5

100 s: (16.1...16.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320

travel mm : 9.30...9.70

2nd speed rpm : 1255

travel mm : 6.50...6.70

3rd speed rpm : 360

travel mm : 3.90...4.50

4th speed rpm : 250

travel mm : 1.60...2.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 163.0...165.0

1000 : (161.0...167.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 91...99

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.60
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1340...1370
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.0

Testing:
Speed rpm : 150
Minimum rack travel: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 200
Rack travel mm : 10.00...10.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.80
2nd pressure hPa : 700
Rack travel in m: 12.30...12.60
3rd pressure hPa : 1200
Rack travel in m: 13.60...13.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm³/ : 167.0...170.0
1000 s: (164.5...172.5)

Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 70.0...90.0
1000 s: (67.0...93.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 21.0...25.0
1000 s: (18.5...27.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
: MAN #3-7137
Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 27.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 466 127

Injection pump
Pump designation : PES6MW100/120RS1137-
2

EP type number : 0 413 406 180
Governor
Governor design. : RSV550...1100MW2A335
-1

Governor no. : 0 420 085 185

Customer-spec. information
Customer : CUMMINS

Engine : 6 CTA-8.3

1st version kW : 194.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness : 6.00x2.00x600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

E04

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.50...14.60

Del.quantity cm³/ : 15.5...15.7

100 s: (15.3...15.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 550.0

Rack travel in mm : 6.7...6.9

Del.quantity cm³/ : 2.2...2.6

100 s: (2.0...2.9)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 155.5...157.5

1000 : (153.5...159.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 88...96

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.50
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1215...1225
3rd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 550
Rack travel in mm : 6.20...6.40

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.50...14.60
2nd speed rpm : 750
Rack travel in m: 14.70...14.80
3rd speed rpm : 1000
Rack travel in m: 14.70...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.70...14.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.30...11.50
2nd pressure hPa : 370
Rack travel in m: 12.20...12.30
3rd pressure hPa : 575
Rack travel in m: 13.60...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 750
Del.quantity cm3/ : 156.0...160.0
1000 s: (154.0...162.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 100.0...102.0
1000 s: (98.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (127.0...153.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 22.5...26.5
1000 s: (20.0...29.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: CUM #3911657

Start-of-delivery mark or blockage =
8.5° cam rotation angle after start of
delivery for cylinder 1.

Adjust stop lever to 0.5...1.0 mm
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 20.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 466 128

Injection pump
Pump designation : PES6MW100/120RS1137-
2

EP type number : 0 413 406 180

Governor

Governor design. : RSV550...1100MW2A335
-2

Governer no. : 0 420 085 196

Customer-spec. information

Customer : CUMMINS

Engine : 6 CTA-8.3

1st version kW : 176.0

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

EO6

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 14.0...14.2

100 s: (13.8...14.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 550.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 2.2...2.6

100 s: (2.0...2.9)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1000

Del.quantity : 140.0...142.0

1000 : (138.0...144.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 86...94

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.30
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1215...1225
3rd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 550
Rack travel in mm : 6.20...6.40

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 13.30...13.40
2nd speed rpm : 750
Rack travel in m: 14.00...14.10
3rd speed rpm : 1000
Rack travel in m: 14.00...14.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 450
Rack travel in m: 11.00...11.10
3rd pressure hPa : 650
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 153.0...157.0
1000 s: (151.0...159.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 79.0...81.0
1000 s: (77.0...83.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (127.0...153.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 22.5...26.5
1000 s: (20.0...29.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: CUM #3921691

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 B
 Edition : 03.04.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 403 474 008
 Injection pump
 Pump designation : PES4MW100/720RS1181
 EP type number : 0 413 404 107
 Governor
 Governor design. : RSV400...1000MW1A333
 Governor no. : 0 420 085 118

Customer-spec. information
 Customer : LIEBHERR

Engine : 914

1st version kw : 120.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 15.3...15.5

100 s: (15.1...15.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Del.quantity : 153.0...155.0

1000 : (151.0...157.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.20
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1.75
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 980
Rack travel in m: 12.20...12.30
2nd speed rpm : 600
Rack travel in m: 12.20...12.30
5th speed rpm : 450
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 154.5...157.5
1000 s: (152.0...160.0)
Spread cm3 : 3.50
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 13.03.92
Replaces : 02.92
Test oil : ISO-4113
Combination no. : 0 403 474 022
Injection pump
Pump designation : PES4MW100/720RS1151
EP type number : 0 413 404 104
Governor
Governor design. : RSV350...1300MWA329
-12
Governor no. : 0 420 085 189

Customer-spec. information
Customer : MB-NFZ

Engine : OM364A

1st version kW : 79.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280
Rack travel in mm : 10.80...10.90
Del.quantity cm3/ : 8.2...8.4
100 s: (8.0...8.6)
Spread cm3 : 0.3
100 s: (0.6)
2nd speed rpm : 350.0
Rack travel in mm : 6.0...6.8
Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1280
Aneroid pressure h: 700
Del.quantity : 82.0...84.0
1000 : (80.0...86.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 95...103

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.90
Speed rpm : 1320...1330
2nd rack travel in: 4.00
Speed rpm : 1390...1420
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.00...6.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1280
Rack travel in m: 10.90...11.00
2nd speed rpm : 600
Rack travel in m: 11.80...11.90
3rd speed rpm : 1000
Rack travel in m: 11.70...11.90
4th speed rpm : 1175
Rack travel in m: 11.00...11.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.80...10.00

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.70...10.90
2nd pressure hPa : 300
Rack travel in m: 11.20...11.40
3rd pressure hPa : 700
Rack travel in m: 11.70...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm³/ : 75.0...78.0
1000 s: (72.5...80.5)

Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.80
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Test hydr. locking device for starting
with 800...1200 hPa air pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,7 C
Edition : 13.03.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 403 476 111

Injection pump
Pump designation : PES6MW100/320RS1198-
1

EP type number : 0 413 406 211
Governor
Governor design. : RSV350...125UMW2A347
Governor no. : 0 420 085 182

Customer spec. information
Customer : NAVISTAR

Engine : DT-466

1st version kW : 156.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.60...11.70

Del.quantity cm³/ : 12.3...12.5

100 s: (12.1...12.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 4.9...5.1
Del.quantity cm³/ : 1.5...1.9
100 s: (1.3...2.2)
Spread cm³ : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 900

Del.quantity : 123.0...125.0

1000 : (121.0...127.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 100...108

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.60

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1350...1360

3rd rack travel in: 4.00

Speed rpm : 1340...1370

4th rack travel in: 1500

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 70...78

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.0

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 350

Rack travel in mm : 4.90...5.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 9.00...9.10

Measurement

Speed 1/min : 500

1st pressure hPa : 265

Rack travel in m: 10.00...10.10

2nd pressure hPa : 455

Rack travel in m: 10.80...11.20

3rd pressure hPa : 900

Rack travel in m: 11.60...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 79.5...83.5

1000 s: (77.5...85.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 160.0...180.0

1000 s: (155.0...185.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.90...5.10

Del.quantity cm3/ : 15.5...19.5

1000 s: (13.0...22.0)

Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

: CUM #1818555C91

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 27.03.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 113
 Injection pump
 Pump designation : PES6MW100/720RS1131-
 1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RSV350...1200MWA342
 -10
 Governor no. : 0 420 085 187

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 132.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 11.00...11.20
 Del.quantity cm3/ : 7.6...7.8
 100 s: (7.4...8.0)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.5...6.0
 Del.quantity cm3/ : 0.9...1.3
 100 s: (0.6...1.5)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 700
 Del.quantity : 76.0...78.0
 1000 : (74.0...80.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 96...104

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.10
Speed rpm : 1240...1245 *
2nd rack travel in: 4.00
Speed rpm : 1280...1293
3rd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1240...1255
Speed rpm : 10.10

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.00...5.50
Rack travel in mm : 2.00
Speed rpm : 400...460

TORQUE CONTROL

Dimension a mm : 1.10
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 11.00...11.20
2nd speed rpm : 600
Rack travel in m: 12.10...12.30
3rd speed rpm : 1000
Rack travel in m: 11.50...11.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.00...11.20
2nd pressure hPa : 300
Rack travel in m: 11.60...11.80
3rd pressure hPa : 700
Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

E15

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 69.5...72.5
1000 s: (67.0...75.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.50...6.00
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

* Read off speed set under 1.
Add 40...48 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

Test hydr. locking device for starting
with 800...1200 hPa air pressure.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 20.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 476 117

Injection pump
Pump designation : PES6MW100/720RS1131-
1
EP type number : 0 413 406 165
Governor
Governor design. : RSV750...1200MWOA329
-15
Governor no. : 0 420 085 193

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 10.6...10.8
100 s: (10.4...11.0)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 750.0

Rack travel in mm : 5.8...6.3

Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)

Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Aneroid pressure h: 1000

Del.quantity : 106.0...108.0
1000 : (104.0...110.0)

Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 82...90

Setting point:
Speed rpm : 800

Rack travel in mm : 0.6

Testing:
1st rack travel in: 12.20

Speed rpm : 1230...1235 *
2nd rack travel in: 4.00
Speed rpm : 1310...1318
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 750
Rack travel in mm : 5.80...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.20

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.30...11.40
2nd pressure hPa : 500
Rack travel in m: 12.40...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.20

E17

Speed rpm : 1230...1235

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 750
Rack travel in mm : 5.80...6.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting
with 800...1200 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 03.04.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 120
Injection pump
Pump designation : PES6MM100/72ORS1131-
1
EP type number : 0 413 406 165
Governor
Governor design. : RSV350...750MWOA336-
6
Governor no. : 0 420 085 198

Customer spec. information
Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 87.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.8

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 74...82

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.50
Speed rpm : 750...755 *
2nd rack travel in: 4.00
Speed rpm : 775...783
4th rack travel in: 850
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 60...68
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.80...6.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.80
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

;
* Read off speed set under 1.
Add 25...33 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SFA
Edition : 13.4.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 406 036 032

Injection pump
Pump designation : PE6ZWM150/520/3LS33
EP type number : 0 416 056 008
Governor
Governor design. : RQUV320...775ZWA64R
Governor no. : 0 422 409 034

Customer spec. information
Customer : SFAC

Engine : S1 DHR1

1st version kW : 440.0
Rated speed : 1550

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 40...45

Overflow valve : 2 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 443 022

Opening
pressure, bar : 172...175

Test lines : 1 680 750 027

Outside diameter
x Wall thickness
x Length mm : 8.00X2.00X1500

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 12.00
Firing order : 1-5-3-6-2-4

E20

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0..75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00

Del. quantity cm³/ : 33.5...34.5

100 s: (33.3...34.7)

Spread cm³ : 1.0

100 s: (1.5)

2nd speed rpm : 600

Rack travel in mm : 9.00

Del. quantity cm³/ : 20.0...22.0

100 s: (19.5...22.5)

Spread cm³ : 1.0

100 s: (1.5)

3rd speed rpm : 200

Rack travel in mm : 9.00

Del. quantity cm³/ : 9.5...12.5

100 s: (8.8...13.2)

Spread cm³ : 1.0

100 s: (1.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 74...80

Speed rpm : 775

Rack travel in mm : 14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 775

Del. quantity : 475.0...485.0

1000 : (472.0...488.0)

Spread cm³ : 10.0

1000 : (15.0)

RATED SPEED

1st version

Control lever

position degrees: 74...80

Testing:

1st rack travel in: 13.00

Speed rpm : 810...830

2nd rack travel in: 7.00

Speed rpm : 835...875
3rd rack travel in: 2.00
Speed rpm : 855...930
4th rack travel in: 865...955
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 21...27

Testing:
Speed rpm : 200
Minimum rack trave: 12.50
Speed rpm : 250
Rack travel in mm : 11.50...14.00
Rack travel in mm : 8.00
Speed rpm : 320
Speed rpm : 500
Maximum rack trave: 3.30
Speed rpm : 300
Rack travel in mm : 9.15
Rack travel in mm : 6.25
Speed rpm : 340...360

LOW IDLE 2
Control lever
position degrees: 21...27

Testing:
Speed rpm : 550
Rack travel in mm : 0.00...1.70
Speed rpm : 600
Rack travel in mm : 0.00...1.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 810...830

STARTING FUEL DELIVERY

Speed rpm : 250
Del.quantity cm3/ : 380.0...
1000 s: (-)
Rack travel in mm : 24.00

LOW IDLE

Speed rpm : 320
Rack travel in mm : 8.00
Del.quantity cm3/ : 80.0...100.0
1000 s: (-)
Spread cm3 : 10.0
1000 s: (15.0)

Remarks:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 083 449DD

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A2C2209
R
Governor no. : 9 420 083 201

Cust. part no. : 3354913

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3 l

1st version kW : 129.1
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.6...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175

Del.quantity : 87.5...89.5

1000 : (85.5...91.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 87...95

Testing:
1st rack travel in: 9.10
Speed rpm : 1215...1225
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 10.10...10.20
2nd speed rpm : 500
Rack travel in m: 11.30...11.50
4th speed rpm : 800
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm3/ : 90.5...93.5
1000 s: (88.0...96.0)
Speed rpm : 800
Del.quantity cm3/ : 92.5...95.5
1000 s: (90.0...98.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.10
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100

E23

Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 16.5...20.5
1000 s: (14.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 x
Edition : 24.10.91
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 9 400 083 459

Injection pump
Pump designation : PES6A95D120RS2822
EP type number : 9 400 084 029
Governor
Governor design. : RGV350...1250AB1235-2R
Governor no. : 9 420 080 311

Customer-spec. information
Customer : CUMMINS

Engine : 6 BT

1st version kW : 119.3
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
: (2.70...2.90)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 8.6...8.8
100 s: (8.4...9.0)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 0.6...1.0
100 s: (0.4...1.2)

Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1300
travel mm : 6.80...6.90
2nd speed rpm : 350
travel mm : 1.20...1.70
3rd speed rpm : 700
travel mm : 4.00...4.50
4th speed rpm : 1550
travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1530
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 600
Del.quantity : 86.0...88.0
1000 : (84.0...90.0)

Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:
1st rack travel in: 11.70
Speed rpm : 1310...1320
2nd rack travel in: 4.00
Speed rpm : 1545...1575
4th rack travel in: 1750
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 350
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION
Speed rpm : 475...575

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.90
2nd pressure hPa : 320
Rack travel in m: 12.00...12.10
3rd pressure hPa : 410
Rack travel in m: 12.40...12.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 600
Speed rpm : 700
Del.quantity cm³/ : 80.0...83.0
1000 s: (77.5...85.5)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 64.0...67.0
1000 s: (62.0...69.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 6.0...10.0
1000 s: (4.0...12.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 i
 Edition : 13.03.92
 Replaces : 08.91
 Test oil : ISO-4113

Combination no. : 9 400 087 419

Injection pump
 Pump designation : PES6P120A720RS3234
 EP type number : 9 400 087 068
 Governor
 Governor design. : RQV350...1150PA923-2
 K
 Governor no. : 9 420 080 274

Customer-spec. information
 Customer : FORD (FNH)

Engine : 7.8 Ltr

1st version kW : 156.6
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 072

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 85...95

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.35...2.45
 : (2.30...2.50)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 15.8...16.0
 100 s: (15.5...16.3)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 2.6...3.2
 100 s: (2.4...3.4)

Spread cm3 : 0.5
 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1200
 travel mm : 9.50...9.70

2nd speed rpm : 1000
 travel mm : 7.80...8.00

3rd speed rpm : 800
 travel mm : 6.40...6.80

4th speed rpm : 450
 travel mm : 3.80...4.00

5th speed rpm : 350
 travel mm : 2.20...2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 900
 Del.quantity : 158.5...160.5
 1000 : (155.5...163.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.50
Speed rpm : 1210...1220
2nd rack travel in: 4.00
Speed rpm : 1335...1365
4th rack travel in: 1420
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 275
Minimum rack travel: 6.70
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 390...460

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 13.50...13.60
2nd speed rpm : 750
Rack travel in m: 12.40...12.60
3rd speed rpm : 550
Rack travel in m: 11.30...11.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1150
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 1150

1st pressure hPa : -
Rack travel in m: 8.50...8.90
2nd pressure hPa : 300
Rack travel in m: 10.10...10.20
3rd pressure hPa : 500
Rack travel in m: 12.20...12.60

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 750
Del.quantity cm³/ : 165.0...171.0
1000 s: (162.0...174.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 106.5...110.5
1000 s: (104.5...112.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...190.0
1000 s: (146.0...194.0)
Rack travel in mm : 11.60...12.40

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 26.5...32.5
1000 s: (24.5...34.5)
Spread cm³ : 5.00
1000 s: (3.00)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 13.03.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 429
 Injection pump
 Pump designation : PES6P120A720RS3256-3
 EP type number : 9 400 087 079
 Governor
 Governor design. : RQV300...1300PA963
 Governor no. : 9 420 080 283

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 156.6
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 21.00...0.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 4.80...5.40
 Del.quantity cm3/ : 1.7...2.0
 100 s: (1.4...2.3)
 Spread cm3 : 0.2
 100 s: (0.3)

2nd speed rpm : 300.0
 Rack travel in mm : 7.2...7.5
 Del.quantity cm3/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 660
 travel mm : 3.80...4.30
 3rd speed rpm : 960
 travel mm : 5.20...5.70
 4th speed rpm : 1357
 travel mm : 8.00...8.50
 5th speed rpm : 1492
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1385
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Del.quantity : 17.0...20.0
1000 : (14.0...23.0)
Spread cm3 : 2.00
1000 : (3.00)

RATED SPEED

1st version

Control lever
position degrees: 107...115

Testing:

1st rack travel in: 10.80
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 73...81

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1100
Rack travel mm : 11.80...12.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.60
2nd pressure hPa : 300
Rack travel in m: 10.00...10.20
3rd pressure hPa : 600
Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

FO1

1st version

Aneroid pressure h: 1100
Speed rpm : 1300
Del.quantity cm3/ : 157.0...159.0
1000 s: (154.0...162.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 800
Del.quantity cm3/ : 141.0...147.0
1000 s: (138.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 55.0...57.0
1000 s: (52.0...60.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.20...7.50
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of
delivery of cylinder no. 1.

Note remarks

Combination no. : 9 400 087 430

1st version
Speed rpm : 1000
Del.quantity : 17.0...20.0
1000 : (14.0...23.0)
Spread cm3 : 2.00
1000 : (3.00)

RATED SPEED

1st version
Control Lever
position degrees: 107...115

Testing:
1st rack travel in: 11.60
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 73...81

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.60...12.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.60
2nd pressure hPa : 300
Rack travel in m: 10.00...10.20
3rd pressure hPa : 700
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm3/ : 177.0...179.0
1000 s: (174.0...182.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 159.0...165.0
1000 s: (156.0...168.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 55.0...57.0
1000 s: (52.0...60.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0
1000 s: (96.0...124.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.20...7.50
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of
delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 087 433

Injection pump
Pump designation : PES6P120A720LS7176
EP type number : 0 412 726 821
Governor
Governor design. : RQ300/1050PA911-4
Governor no. : 9 420 080 318

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 A

1st version kW : 210.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 215.5...217.5

1000 : (212.5...220.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.60
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1260
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.60...13.80
2nd speed rpm : 750
Rack travel in m: 14.80...15.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 14.50...14.70

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.80...12.00
2nd pressure hPa : 550
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1050
Rack travel in m: 14.70...14.80
4th pressure hPa : -
Rack travel in m: 10.70...11.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

F05

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 192.5...196.5
1000 s: (189.5...199.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 220.0...223.0
1000 s: (217.0...226.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (201.0...229.0)

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column
ect n at adjusting nut (46)

Test sheet : VMA
Edition : 16.04.92
replaces : -
Calibrating oil : ISO-4113

e c Injection pump : VE3/10F1600L483
ld- Type number : 0 460 403 016
. Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 394 H

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Setting value mm: 2.50...2.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1200
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1200
Del. quantity cm3/
1000S.: 45.00...46.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 10.50...14.50
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1720
Del. quantity cm3/
1000S.: 21.00...27.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...100.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1200
Inj.-qty. cm3/
difference 1000S.: 18.00...26.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1200
TD-travel
difference mm: 0.80...1.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1600
TD travel mm: 4.10...4.90
mm: (3.80...5.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1200
TD travel mm: 2.50...2.90
mm: (2.00...3.40)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
TD travel mm: 1.30...2.10
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

2nd speed 1/min: 600
Supply-pump
pressure bar: 2.80...3.40

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1200
Supply-pump
pressure bar: 5.30...5.90

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1600
Supply-pump
pressure bar: 7.00...7.60
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1600
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1800
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 1720
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 21.00...27.00
1000S.: (18.00...30.00)
8th speed 1/min: 1650
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 37.00...47.00
1000S.: (36.00...48.00)

9th speed 1/min: 1600

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 44.00...47.00
1000S.: (42.50...48.50)

12th speed 1/min: 1200

Shutoff
electromagnet Volt: 12
Del. quynity cm3/: 45.50...46.50
1000S.: (43.50...48.50)

20th speed 1/min: 600

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 46.00...49.00
1000S.: (44.50...50.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 10.50...14.50
1000S.: (8.50...16.50)

Dispersion cm3/: 3.5
1000S.: (3.5)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 440
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.00...8.00
1000S.: (1.00...9.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1200
Inj.-qty. cm3/ : 15.0...17.0 *
difference 1000S.: (15.00...17.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1200
Inj.-qty. cm3/ : 18.0...26.0 #
difference 1000S.: (18.00...26.00)

Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1200
TD-travel : 0.80...1.00 #
difference mm: (0.80...1.00)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1200
Supply pump-
pressure : 0.10...0.30 *
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 65.00...95.00
1000S.: (65.00...95.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...55.00
1000S.: (35.00...55.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 60.00...100.00
1000S.: (60.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.8...6.2
MS mm: 0.6...1.0

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 14.04.92
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE4/10F160DL352
Type number : 0 460 404 061
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 494 HP

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Setting value mm: 1.90...2.30
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1200
Setting value bar: 4,80...5.40
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1200
Del. quantity cm3/
1000S.: 44.50...45.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 11.50...15.50
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1650
Del. quantity cm3/
1000S.: 27.00...33.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 45.00...85.00
mind 1000S.: 45.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1200
Inj.-qty. cm3/
difference 1000S.: 10.00...18.00
Shutoff
electromagnet Volt: -
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1200
TD-travel
difference mm: 0.90...1.10
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1600
TD travel mm: 3.60...4.40
mm: (3.30...4.70)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1200
TD travel mm: 1.90...2.30
mm: (1.40...2.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

2nd speed 1/min: 600
Supply-pump pressure bar: 2.40...3.00

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1200

Supply-pump pressure bar: 4.80...5.40
Shutoff

electromagnet Volt: 12
4th speed 1/min: 1600

Supply-pump pressure bar: 6.40...7.00

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff

electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1600
Shutoff

electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 1700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1650
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 27.00...33.00
1000S.: (24.00...36.00)

8th speed 1/min: 1625
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 33.50...41.50
1000S.: -

9th speed 1/min: 1600
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 38.00...41.00
1000S.: (36.50...42.50)

12th speed 1/min: 1200
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 44.50...45.50
1000S.: (42.00...48.00)

20th speed 1/min: 600
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 43.50...46.50
1000S.: (42.00...48.00)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1600
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 11.50...15.50
1000S.: (9.50...17.50)

Dispersion cm³/: 3.5
1000S.: (3.5)

2nd speed 1/min: 480
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 2.00...8.00
1000S.: (1.00...9.00)

3rd speed 1/min: 550
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1200
Inj.-qty. cm3/: 10.00...18.00
difference 1000S.: -

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1200
TD-travel : 0.90...1.10
difference mm: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 50.00...80.00
1000S.: (50.00...80.00)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 40.00...60.00
1000S.: (40.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.00...85.00
1000S.: (45.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: 5,7...5,9
MS mm: 0,6...1,0
SVS max. mm: 1,3
XK mm: 17,0...19,0
XL mm: 14,2...17,6

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 2,2 F1
Edition : 14.04.92
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L269-1
Type number : 0 460 404 065
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 492.4 HJ

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.50...1.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 4.40...5.00
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 66.00...67.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 45.00...46.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 27.00...33.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 47.00...67.00
mind 1000S.: 47.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Inj.-qty. cm3/
difference 1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement

correttore anticipo iniezione (SV)
1.Speed 1/min: 1500
TD-travel
difference mm: 0.90...1.10
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 7.10...7.90
mm: (6.80...8.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.50...1.90
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 4.10...4.90
mm: (3.80...5.20)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.50...8.10
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.40...5.00
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 700
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.60...4.20
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 58.50...59.50
1000s.: (56.50...61.50)

3rd speed 1/min: 2450
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...8.00
1000s.: (0.00...8.00)

5th speed 1/min: 2300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...33.00
1000s.: (26.00...34.00)

9th speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 56.50...59.50
1000s.: (55.00...61.00)

12th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 66.00...67.00
1000s.: (64.50...68.50)

18th speed 1/min: 700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...46.00
1000s.: (43.00...48.00)

20th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 67.70...70.70
1000s.: (66.20...72.20)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)
Dispersion cm³/: 3.0
1000S.: (3.0)
2nd speed 1/min: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...13.00
1000S.: (5.00...15.00)
4th speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.50...5.50
1000S.: (0.50...5.50)

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/: 3.00...5.00
difference 1000S.: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Inj.-qty. cm³/: 8.00...14.00
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.90...1.10
difference mm: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500
Supply pump-
pressure : 0.10...0.30
difference bar: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 52.00...72.00
1000S.: (52.00...72.00)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...60.00
1000S.: (40.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 47.00...67.00
1000S.: (47.00...67.00)

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: 5,6...6,0
MS mm: 0,6...1,0
XK mm: 20,0...22,0
XL mm: 10,0...13,4

Remarks:

:
:
Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 14.04.92
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE4/10F2050R364
Type number : 0 460 404 066
Customer Part-No. :

Customer-specific information
Customer : SOFIM

Engine : 8140.67.2580

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,2
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.50...5.10
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 2000
Del. quantity cm³/
1000S.: 35.00...36.00
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.0
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 14.00...18.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm³/
1000S.: 13.00...19.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...100.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Inj.-qty. cm³/
difference 1000S.: 20.00...26.00 *
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000
TD-travel
difference mm: 0.40...0.60 *
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
TD travel mm: 7.30...8.10
mm: (7.00...8.40)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
TD travel mm: 3.10...3.50
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
TD travel mm: 0.80...1.60
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2000
TD travel mm: 8.20...9.00
mm: (7.90...9.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000
Supply-pump pressure bar: 7.00...7.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump pressure bar: 4.50...5.10

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Supply-pump pressure bar: 3.50...4.10

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)
2nd speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(40.60...154.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2330
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...19.00
1000S.: (12.00...20.00)

8th speed 1/min: 2150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 23,50...30,50
1000S.: -

12th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...36.00
1000S.: (33,50...37,50)

15th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 38.50...41.50
1000S.: (37.50...42.50)

17th speed 1/min: 600
Shutoff
electromagnet volt: 12
Del. quantity cm³/: 31.50...34.50
1000H.: (30.50...35.50)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31.50...34.50
1000S.: (29.50...36.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 14.00...18.00
1000S.: (11.00...21.00)

Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...13.00
1000S.: (5.00...15.00)

4th speed 1/min: 465
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 0.00...2.00
1000S.: (0.00...2.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1000
Inj.-qty. cm3/ : 19.0...21.0 #
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Inj.-qty. cm3/: + 4.0...6.0 '
difference 1000S.: -

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
TD-travel : 0.80...1.80 '
difference mm: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1000
Supply pump-
pressure : 0.10...0.30 #
difference bar: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 48.00...68.00
1000S.: (48.00...68.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 28.00...38.00
1000S.: (28.00...38.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 70.00...100.00
1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

F17

K mm: -
KF mm: 5,6...6,0
MS mm: 1,6...2,0
SVS max. mm: 1,9

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 10.03.92
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE4/10F2100L414-1
Type number : 0 460 404 073

Customer-specific information
Customer : VM

Engine : HR 425 CLIRS

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1,2...1,6
Shutoff
electromagnet Volt: 12,0

Supply-pump pressure

Speed 1/min: 1000

F18

Charge press hPa: 1000
Setting value bar: 4,7...5,3
Shutoff
electromagnet Volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 65,5...66,5

Shutoff
electromagnet Volt: 12,0
Dispersion cm3/: 3,0
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 43,0...44,0

Shutoff
electromagnet Volt: 12,0

Low-idle speed regulation

Speed 1/min: 450
Charge press hPa: -
Del. quantity cm3/
1000S.: 13,0...17,0

Shutoff
electromagnet Volt: 12,0
Del. quantity cm3/: 3,0
1000S.: -

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 40,0...46,0

Shutoff
electromagnet Volt: 12,0

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm3/: -
mind 1000S.: 35,0

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: -
Inj.-qty. cm3/
difference 1000S.: 7,0...9,0
Shutoff
electromagnet Volt: 12,0

SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1500
 Charge press hPa: -
 Supply pump
 pressure
 difference bar: 0,1...0,3
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
 Charge press hPa: 1000
 TD travel mm: 1,2...1,6
 mm: (0,7...2,1)
 electromagnet Volt: 12,0
 2nd speed 1/min: 1500
 Charge press hPa: 1000
 TD travel mm: 4,0...4,8
 mm: (3,7...5,1)

Shutoff
 electromagnet Volt: 12,0
 3rd speed 1/min: 2100
 Charge press hPa: 1000
 TD travel mm: 7,0...7,8
 mm: (6,7...8,1)

Shutoff
 electromagnet Volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 700
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 3,8...4,4
 Shutoff
 electromagnet Volt: 12,0
 2nd speed 1/min: 1000
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4,7...5,3
 Shutoff
 electromagnet Volt: 12,0
 3rd speed 1/min: 2100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7,6...8,2
 Shutoff
 electromagnet Volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 700
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12,0

Overflow : 41,6...83,3
 quantity cm3/10s: (26,6...98,3)
 2nd speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12,0
 Overflow : 55,5...138,8
 quantity cm3/10s: (40,5...153,3)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 350
 LDA-stroke mm: 7,0
 Shutoff
 electromagnet Volt: 12,0
 Del. quantity cm3/: 55,5...56,5
 1000S.: (53,5...58,5)

2nd speed 1/min: 2500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12,0
 Del. quantity cm3/: 0,0...8,0
 1000S.: -

3rd speed 1/min: 2300
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12,0
 Del. quantity cm3/: 41,0...45,0
 1000S.: (39,0...47,0)

4th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12,0
 Del. quantity cm3/: 63,0...66,0
 1000S.: (61,5...67,5)

5th speed 1/min: 1500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12,0
 Del. quantity cm3/: 65,5...66,5
 1000S.: (64,0...68,0)

6th speed 1/min: 700
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12,0
 Del. quantity cm3/: 65,5...68,5
 1000S.: (64,0...70,0)

7th speed 1/min: 700
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12,0
 Del. quantity cm3/: 43,0...44,0
 1000S.: (41,0...46,0)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Charge press. hPa: -
Del. quantity cm³/: 0,0...3,0
1000S.: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 13,0...17,0
1000S.: (10,0...20,0)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 2,5...7,5
1000S.: (2,0...8,0)
3rd speed 1/min: 600
Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 0,0...5,0
1000S.: -

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Charge press. hPa: -
Inj.-qty. cm³/: 13,0...19,0 *
difference 1000S.: -
Shutoff
electromagnet Volt: 12,0

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
Charge press. hPa: -
TD-travel : 1,4...1,6 *
Shutoff
electromagnet Volt: 12,0

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12,0

1st speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 42,5...44,5
1000S.: (41,0...46,0)

Automatic starting fuel delivery:

1st speed 1/min: 400
Charge press. hPa: -

F20

Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 45,0...65,0
1000S.: -

2nd speed 1/min: 550
Charge press. hPa: -
Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 25,0...45,0
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: 5,2...5,6
MS mm: 0,6...1,0
SVS max. mm: 4,3
LDA stroke mm: 7,0

Ajustement Potentiometer:

Angle for
pot. °: 45
Supply voltage
pot. volt: 5,0
Output volt
pot. volt: 2,95

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 09.04.92
replaces : 13.09.91
Calibrating oil : ISO-4113

Injection pump : VE4/11F2250R413
Type number : 0 460 414 082
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : T 4.20 (V)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,2
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 800

Setting value mm: 4.00...4.40
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 800
Setting value bar: 7.30...7.90
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 800
Del. quantity cm3/
1000S.: 66.50...67.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 625
Del. quantity cm3/
1000S.: 29.50...30.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 9.00...11.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 800
Del. quantity cm3/
1000S.: 23.50...25.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...100.00
mind 1000S.: 70.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 800
TD travel mm: 6.10...6.90
mm: (5.80...7.20)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Charge press hPa: 800
TD travel mm: 4.00...4.40
mm: (3.60...4.80)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 800
TD travel mm: 1.90...2.70
mm: (1.60...3.00)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
8th speed 1/min: 800
Charge press. hPa: 800
TD travel mm: 1.50...3.50
mm: (1.30...3.70)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
9th speed 1/min: 500
Charge press. hPa: 800
TD travel mm: 2.10...2.30
mm: (1.40...3.00)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Charge press. hPa: 800
Supply-pump
pressure bar: 6.00...6.60

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1500
Charge press. hPa: 800
Supply-pump
pressure bar: 7.30...7.90

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 2000
Charge press. hPa: 800
Supply-pump
pressure bar: 8.30...8.90

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 62.55...104.25
quantity cm³/10s: (47.55...119.25)
2nd speed 1/min: 2250
Charge press. hPa: 800

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 69.50...152.90
quantity cm³/10s: (54.50...167.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000
Charge-air pressure-setting
point hPa: 300
LDA-stroke mm: 6,5

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 58.50...59.50
1000S.: (55.50...62.50)

3rd speed 1/min: 2625
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...10.00
 1000S.: (0.00...10.00)
 5th speed 1/min: 2525
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 23.50...25.50
 1000S.: (20.50...28.50)
 9th speed 1/min: 2250
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 70.00...74.00
 1000S.: (69.00...75.00)
 12th speed 1/min: 1250
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 66.50...67.50
 1000S.: (64.50...69.50)
 15th speed 1/min: 1000
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 69.50...72.50
 1000S.: (67.50...74.50)
 18th speed 1/min: 625
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 29.50...30.50
 1000S.: (27.00...33.00)
 20th speed 1/min: 500
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 27.50...32.50
 1000S.: (26.00...34.00)

Mech. shutoff:

Electr. shutoff:

F23

1st speed 1/min: 400
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -
 KSB/AFB
 valve Volt: 12

Idle delivery:

1st speed 1/min: 400
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 9.00...11.00
 1000S.: (6.00...14.00)
 Dispersion cm³/: 3.0
 1000S.: (4.0)

2nd speed 1/min: 500
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: (0.00...5.00)

Automatic starting fuel delivery:

2nd speed 1/min: 350
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 20.00...40.00
 1000S.: (20.00...40.00)

4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 70.00...100.00
 1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: 3.2...3.3
 KF mm: K-OT
 MS mm: 0.6...1.0
 SVS max. mm: -

LDA stroke mm: 6.5
XK mm: 20.0...22.0
XL mm: 10.7...14.1

Remarks:

Overflow restriction 0.75 mm - Part No.
..343,..344

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
Edition : 09.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R415-1
Type number : 0 460 414 085
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 683 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.35
mm: 0.30...0.40
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.20...4.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 6.20...6.80
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000s.: 25.80...26.20 F
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm³/
1000s.: 8.00...9.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000s.: (4.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm³/
1000s.: 23.20...25.20
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 50.00...90.00
mind 1000s.: 50.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)
electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 4.20...4.60
mm: (3.90...4.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
TD travel mm: 2.00...2.80
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 4.40...5.00

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5.70...6.30

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Supply-pump
pressure bar: 6.20...6.80

Shutoff
electromagnet Volt: 12
4th speed 1/min: 2000
Supply-pump
pressure bar: 7.80...8.40

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 97.00...141.00
quantity cm³/10s: (82.00...156.00)
2nd speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Overflow : 115.00...184.00
quantity cm³/10s: (100.00...199.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA-stroke mm: 7.7
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.0...38.4 D
1000S.: (34.7...39.7) D
2nd speed 1/min: 2400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)
3rd speed 1/min: 2200

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 23.20...25.20
1000S.: (19.20...29.20)

4th speed 1/min: 2100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.50...36.50
1000S.: (27.50...39.50)

5th speed 1/min: 1700

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.50...38.90
1000S.: (35.20...40.30)

6th speed 1/min: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.2...33.2 E
1000S.: (30.2...35.2) E

7th speed 1/min: 500

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 24.00...28.0 F
1000S.: (23.20...29.0) F

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...9.00
1000S.: (5.00...13.00)

Dispersion cm³/: 3.0
1000S.: (4.0)

2nd speed 1/min: 500

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.00...10.00
1000S.: (0.00...12.00)

Part-load del. at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 20.0

1st speed 1/min: 1250
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 18.00...19.00
1000S.: (16.00...21.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 40.00...70.00

1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 21.00...31.00

1000S.: -

3rd speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 45.00...85.00

1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 2.7...2.9

KF mm: KOT

MS mm: 1.8

HBA stroke mm: 7.7

XK mm: -

XL mm: -

Remarks:

Overflow restriction 0.75 mm - Part No.

..343,..344 :

Pump/engine assignment:

Attach timing-device cover KDEP 1151.

Plunger lift in blocking position =

0.30...

0.40 mm referenced to outlet "A".

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
Edition : 10.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R415-2
Type number : 0 460 414 089
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5l DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.35
mm: 0.30...0.40

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.80...4.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 6.90...7.50
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 25,8...26.2 F
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 6.00...8.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
1000S.: 23.50...25.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (4.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...80.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.00...7.80
mm: (6.70...8.10)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250

TD travel mm: 3.80...4.20
mm: (3.50...4.50)

Shutoff
electromagnet Volt: 12

4th speed 1/min: 800

TD travel mm: 1.30...2.10
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump
pressure bar: 5.20...5.80

Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1000

Supply-pump
pressure bar: 6.40...7.00

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1250

Supply-pump
pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12

4th speed 1/min: 2000

Supply-pump
pressure bar: 8.60...9.20

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Shutoff
electromagnet Volt: 12

Overflow : 97.30...141.70
quantity cm³/10s: (82.30...156.70)

2nd speed 1/min: 1950

Shutoff
electromagnet Volt: 12

Overflow : 115.30...184.80
quantity cm³/10s: (100.30...199.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950

HBA-stroke mm: 7.7

Shutoff
electromagnet Volt: 12.0

Del. quantity cm³/: 36.5...38.9 D
1000S.: (35.2...40.2) D

2nd speed 1/min: 2400

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...5.00
1000S.: -

5th speed 1/min: 2200

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 23.50...25.50
1000S.: (19.50...29.50)

8th speed 1/min: 2100

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 31.00...37.00
1000S.: (28.00...40.00)

10th speed 1/min: 1700

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 37.00...39.40
1000S.: (35.70...40.70)

12th speed 1/min: 500

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 25.80...26.20
1000S.: (23.00...29.00)

18th speed 1/min: 1000

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 32.0...33.0 E
1000S.: (30.0...35.0) E

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425

Del. quantity cm³/: 0.00...3.00
1000S.: -

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 6.00...8.00
1000S.: (3.00...11.00)

Dispersion cm³/: 3.0
1000S.: (4.0)

2nd speed 1/min: 500

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...8.00
1000S.: -

Part-load del. at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

1st speed 1/min: 1250

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 22.50...23.50
1000S.: (20.50...25.50)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 40.00...70.00

1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 21.00...31.00

1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 40.00...80.00

1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 2.7...2.9

KF mm: K-OT

MS mm: 1.8

HBA stroke mm: 7.7

Remarks:

⋮

* Pump/engine assignment:

Attach timing-device cover KDEP 1151.

Plunger lift in blocking position =

0.30...

0.40 mm referenced to outlet "A".

Overflow restriction 0.75 mm - Part No.
..343,..344

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 13.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/11F1500R196
Type number : 0 460 416 042
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8060.05.200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 3.20...3.60

G03

Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 5.40...6.00
Shutoff
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1300
Del. quantity cm3/
1000S.: 69.50...70.50

Shutoff
electromagnet Volt: 24
Dispersion cm3/: (3.5)
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 325
Del. quantity cm3/
1000S.: 8.00...12.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1650
Del. quantity cm3/
1000S.: 41.00...47.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 76.00...126.00
mind 1000S.: 76.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1400
TD travel mm: 6.20...7.00
mm: (5.90...7.30)
electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 3.20...3.60
mm: (2.70...4.10)

Shutoff
electromagnet Volt: 24

4th speed 1/min: 700
 TD travel mm: 0.50...1.30
 mm: (0.20...1.60)
 Shutoff
 electromagnet Volt: 24
 Supply-pump pressure characteristic:
 1st speed 1/min: 700
 Supply-pump pressure bar: 4.20...4.80
 Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 1000
 Supply-pump pressure bar: 5.40...6.00
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1500
 Supply-pump pressure bar: 7.40...8.00
 Shutoff
 electromagnet Volt: 24
 Overflow quantity at overflow valve:
 1st speed 1/min: 600
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1500
 Shutoff
 electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...153.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1750
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 5th speed 1/min: 1650
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 41.00...47.00
 1000s.: (38.00...50.00)
 8th speed 1/min: 1600
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 54.00...66.00
 1000s.: (52.00...68.00)
 9th speed 1/min: 1500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 67.50...70.50
 1000s.: (65.50...72.50)

Shutoff
 electromagnet Volt: 24
 12th speed 1/min: 1300
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 69.50...70.50
 1000s.: (67.00...73.00)
 15th speed 1/min: 800
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 64.50...67.50
 1000s.: (62.50...69.50)
 20th speed 1/min: 600
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 56.00...60.00
 1000s.: (54.50...61.50)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1500
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)

Shutoff
 electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 325
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 325
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 8.00...12.00
 1000s.: (6.00...14.00)

Dispersion cm³/: 3.0
 1000s.: (4.0)

2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 200
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 80.00...130.00
 1000s.: (80.00...130.00)

2nd speed 1/min: 320

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 24.00...44.00
1000S.: (24.00...44.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 76.00...126.00
1000S.: (76.00...126.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.6...6.0
MS mm: 1.9...2.1

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 4.0 F
Edition : 14.04.92
replaces : 23.07.91
Calibrating oil : ISO-4113

Injection pump : VE4/12F1300R346
Type number : 0 460 424 052
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : T4.40 110T

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,0
mm: +0,02(0,06)

Outlet : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.80...2.20
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 5.90...6.50
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 92.00...93.00
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000S.: 78.50...79.50
Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 15.50...19.50
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1440
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 67.00...73.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 110.00...150.00
mind 1000S.: 110.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.10...2.90
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.80...2.20
mm: (1.30...2.70)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 0.20...1.00
mm: (0.00...1.20)

Shutoff
electromagnet Volt: 24
5th speed 1/min: 1300
Charge press. hPa: 1000
TD travel mm: 2.20...3.00
mm: (1.90...3.30)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.00...7.60

Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.90...6.50

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 500
Supply-pump
pressure bar: 3.80...4.40

Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1300
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 7.0
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 84.50...85.50
1000S.: (82.00...88.00)

2nd speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 20.00...28.00
1000S.: (17.00...31.00)

3rd speed 1/min: 1580
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: -

5th speed 1/min: 1440
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 67.00...73.00
1000S.: (64.00...76.00)

9th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 90.50...93.50
1000S.: (88.50...95.50)

10th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 93.00...96.00
1000S.: (91.00...98.00)

12th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 92.00...93.00
1000S.: (89.50...95.50)

18th speed 1/min: 700
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 78.50...79.50
1000S.: (76.00...82.00)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.50...19.50
1000S.: (12.50...22.50)

Dispersion cm³/: 5.0
1000S.: (5.0)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 4.50...10.50
1000S.: (2.50...12.50)

4th speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 120.00...160.00
1000S.: (115.00...165.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 65.00...75.00
1000S.: (65.00...75.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 110.00...150.00
1000S.: (110.00...150.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: 3,2...3,4
KF	mm: K-OT
MS	mm: 0,6...1,0
SVS max.	mm: 1,8
XK	mm: 20.0...22.0
XL	mm: 13,8...17,2

Remarks:

:
:

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 P43
Edition : 14.04.92
replaces : 15.07.91
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R378-7
Type number : 0 460 424 074
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : 4 BT-390

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 2,35
mm: +0,02(0,06)

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.30...2.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Del. quantity cm3/
1000S.: 63.50...64.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 500
Del. quantity cm3/
1000S.: 6.00...12.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1170
Del. quantity cm3/
1000S.: 31.50...38.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...120.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 3.10...3.90
mm: (2.80...4.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900

TD travel mm: 2.30...2.70
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 650
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2.40...3.00
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Supply-pump
pressure bar: 4.10...4.70
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Supply-pump
pressure bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1100
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1260
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1190
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...40.00
1000S.: (10.00...40.00)
5th speed 1/min: 1170
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31.50...38.50
1000S.: (29.00...41.00)
9th speed 1/min: 1100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.50...63.50
1000S.: (59.00...65.00)
10th speed 1/min: 900

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.80...63.80
1000S.: (58.80...65.80)
12th speed 1/min: 750

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 63.50...64.50
1000S.: (61.00...67.00)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 61.00...69.00
1000S.: (59.00...71.00)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 500
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...12.00
1000S.: (4.00...14.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 570
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...130.00
1000S.: (70.00...130.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...120.00
1000S.: (70.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: K-OT
MS mm: 1,2...1,6
SVS max. mm: 3,2

Remarks:
: C.D.C. # 391 7528
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 14.04.92
replaces : 15.07.91
Calibrating oil : ISO-4113

Injection pump : VE4/12F1350R407
Type number : 0 460 424 075
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8040.25.4000 TC

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection pump setting values
Test specifications in parentheses

Timing-device travel

Speed : 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.40...1.80

Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 79.00...80.00

Shutoff
electromagnet Volt: 24
Dispersion cm3/: 3.5
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 64.00...65.00

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 3.5
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1525
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 30.00...36.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...110.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 2.20...3.00
 mm: (1.70...3.50)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1000
 Charge press hPa: 1000
 TD travel mm: 1.40...1.80
 mm: (0.70...2.50)

5th speed 1/min: 1350
 Charge press. hPa: 1000
 TD travel mm: 3.70...4.50
 mm: (3.20...5.00)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3.70...4.30

Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 1000
 Charge press. hPa: 1000

Supply-pump pressure bar: 5.70...6.30
 Shutoff
 electromagnet Volt: 24

3rd speed 1/min: 1350
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.50...8.10

Shutoff
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24

Overflow quantity cm3/10s: 41.70...83.40
 (26.70...98.40)
 2nd speed 1/min: 1350
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Overflow quantity cm3/10s: 55.60...139.00
 (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600*

Charge-air pressure-setting point hPa: 375
 LDA-stroke mm: 6,7

Shutoff
 electromagnet Volt: 24
 Del. quantity cm3/1000S.: 64.00...65.00
 (60.50...68.50)

2nd speed 1/min: 1600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24

Del. quantity cm3/1000S.: 0.00...3.00
 (0.00...3.00)
 5th speed 1/min: 1525
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Del. quantity cm3/1000S.: 30.00...36.00
 (27.00...39.00)

8th speed 1/min: 1475
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24

Del. quantity cm3/1000S.: 43.00...51.00
 (41.00...53.00)
 9th speed 1/min: 1350
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Del. quantity cm3/1000S.: 69.50...72.50
 (67.50...74.50)

10th speed 1/min: 1200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24

Del. quantity cm3/1000S.: 72.00...76.00
 (70.50...77.50)
 12th speed 1/min: 700
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Del. quynity cm3/1000S.: 79.00...80.00
 (76.00...83.00)

18th speed 1/min: 600
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 24

Del. quantity cm3/1000S.: 45.50...46.50
 (42.50...49.50)
 20th speed 1/min: 600
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Del. quantity cm3/1000S.: 82.50...86.50
 (81.00...88.00)

21th speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 44.00...48.00
1000S.: (42.00...50.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1350
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: -

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: -

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.5
1000S.: (5.0)

2nd speed 1/min: 475
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 45.00...65.00
1000S.: (45.00...65.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: 3,7
KF	mm: K-OT
MS	mm: 0,7...1,1
LDA stroke	mm: 6,7

Operate control lever after each
manifold-pressure compensator pressure
change. :

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CDC 3,9 P60
Edition : 14.04.92
replaces : 15.01.92
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R424
Type number : 0 460 424 079
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BTAA 3.9

Power KW: 79
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1.2
mm: 0.02(0.06)

Outlet : A

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 1.00...1.40
AFB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 6.90...7.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 85.50...86.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 53.50...54.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 14.50...18.50

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1335
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 74.00...80.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 115.00...165.00
mind 1000S.: 115.0
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.10...2.90
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 1.00...1.40
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 12
8th speed 1/min: 450
Charge press. hPa: -
TD travel mm: 2.00...3.00
mm: (1.80...3.20)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 850
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.50...6.10
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.90...7.50
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.50...8.10
Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.00...4.60
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting
point hPa: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 69.00...70.00
1000S.: (65.50...73.50)
2nd speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: -
3rd speed 1/min: 1440
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...45.00
1000S.: -
5th speed 1/min: 1325
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 72.00...78.00
1000S.: (72.00...78.00)
9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 81.00...86.00
1000S.: (79.50...87.50)
10th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 84.00...89.00
1000S.: (82.50...90.50)
12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 85.50...86.50
1000S.: (83.00...89.00)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 53.50...54.50
1000S.: (50.00...58.00)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1250
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 14.50...18.50
1000S.: (11.50...21.50)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 490
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 140.00...190.00
1000S.: -

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: -

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 115.00...165.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm: 3.5...3.9
KF	mm: K-01
MS	mm: 0.8...1.2
SVS max.	mm: -
LDA stroke	mm: 7.0

Remarks:

: C.D.C. # 391 3443
Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 09.04.92
replaces : 12.07.91
Calibrating oil : ISO 4113

Injection pump : VE4/12F1100R378-8
Type number : 0 460 424 081

Customer-specific information
Customer : CDC

Engine : 4 BT

Power KW: 67
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.0...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0,30...0,40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253,00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,8
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2,3...2,7
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4,1...4,7
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 900
Del. quantity cm³/
1000S.: 68,0...69,0
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4,0
1000S.: (4,5)

Low-idle speed regulation

Speed 1/min: 475
Del. quantity cm³/
1000S.: 10,5...16,5
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5,5
1000S.: (7,0)

Full-load speed regulation

Speed 1/min: 1175
Del. quantity cm³/
1000S.: 32,5...37,5
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: -
mind 1000S.: 65,0
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
electromagnet Volt: 12
2nd speed 1/min: 900

TD travel mm: 2,3...2,7
mm: (1,8...3,2)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
TD travel mm: 3,4...4,1
mm: (3,0...4,4)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,3...2,9
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Supply-pump
pressure bar: 4,1...4,7
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Supply-pump
pressure bar: 4,9...5,5
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Shutoff
electromagnet Volt: 12
Overflow : 55...138
quantity cm³/10s: (40...154)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0,0...3,0
1000S.: -
2nd speed 1/min: 1175
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32,5...37,5
1000S.: (30,0...40,0)
3rd speed 1/min: 1160
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34,0...71,0
1000S.: -
4th speed 1/min: 1100
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 65,5...68,5
1000S.: (64,0...70,0)

5th speed 1/min: 900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 68,0...69,0
1000S.: (65,5...71,5)

6th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70,0...74,0
1000S.: (68,0...76,0)

7th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70,0...78,0
1000S.: (68,0...80,0)

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0,0...3,0
1000S.: -

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 475
Del. quantity cm³/: 0,0...3,0
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10,5...16,5
1000S.: (8,5...18,5)
2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0,0...3,0
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80,0...120,0
1000S.: -

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40,0...80,0
1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5,0...5,4

MS mm: 1,1...1,5

SVS max. mm: 3,2

Remarks:

Overflow restriction 0.55 mm - Part No.

..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAX
Edition : 14.04.92
replaces : 10.10.91
Calibrating oil : ISO 4113

Injection pump : VE4/12F1400R454
Type number : 0 460 424 082
Customer Part-No. :

Customer-specific information
Customer : MAXON

Engine : S4

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0,02(0.04)$

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.3...2.7
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000

G21

Setting value bar: 5.0...5.6
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 83.0...84.0

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 28.0...32.0

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.5
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1480
Del. quantity cm³/
1000S.: 57.0...63.0

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 80.0...120.0
mind 1000S.: 80.0

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0.5...1.3
mm: (0.2...1.6)

electromagnet Volt: 12
2nd speed 1/min: 1000
TD travel mm: 2.3...2.7
mm: (1.8...3.2)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1350
TD travel mm: 3.8...4.6
mm: (3.5...4.9)

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 4.1...4.7
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5.0...5.6
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1350
Supply-pump
pressure bar: 6.5...7.1
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1350
Shutoff
electromagnet Volt: 12
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1535
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.0...37.0
1000S.: (20.0...40.0)
2nd speed 1/min: 1480
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 57.0...63.0
1000S.: (54.0...66.0)
3rd speed 1/min: 1350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 77.0...81.0
1000S.: (75.5...82.5)
4th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 83.0...84.0
1000S.: (80.5...86.5)
5th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 52.0...58.0
1000S.: (50.0...60.0)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 350
Del. quantity cm³/: 0.0...3.0
1000S.: -

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.0...32.0
1000S.: (26.0...34.0)
2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.0...16.0
1000S.: (6.0...18.0)
3rd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.0...6.0
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80.0...120.0
1000S.: -

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.0...60.0
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5,2...5,6
MS mm: 0.7...1.1

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 09.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R378-9
Type number : 0 460 424 084
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BT 3.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 688 901 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.80
mm: $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.30...2.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
Del. quantity cm³/
1000S.: 73.00...74.00
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 15.00...21.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
Del. quantity cm³/
1000S.: 47.00...77.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 75.00...125.00
mind 1000S.: 75.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 3.10...3.90
mm: (2.80...4.20)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900

TD travel mm: 2.30...2.70
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 12

4th speed 1/min: 750
TD travel mm: 1.30...2.10
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2.30...2.90
Shutoff
electromagnet Volt: 12

2nd speed 1/min: 900
Supply-pump pressure bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1100
Supply-pump pressure bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12

Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1100
Shutoff
electromagnet Volt: 12

Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1220
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000S.: -

5th speed 1/min: 1160
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 32.50...37.50
1000S.: (30.00...40.00)

8th speed 1/min: 1130
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 47.00...77.00
1000S.: -

9th speed 1/min: 1100

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 69.00...72.00
1000S.: (67.50...73.50)

12th speed 1/min: 900
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 73.00...74.00
1000S.: (70.50...76.50)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 77.50...85.50
1000S.: (75.50...87.50)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: -

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 15.00...21.00
1000S.: (13.00...23.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 490
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 90.00...130.00
1000S.: -

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 40.00...80.00
1000S.: -

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 75.00...125.00
1000S.: -

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 1.2...1.4
XK	mm: 18.8...20.8
XL	mm: 12.5...15.9

Remarks:

: C.D.C. # 3 920 853
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 14.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R468
Type number : 0 460 424 086
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8040.45.4180

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000

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Setting value mm: 2.60...3.00
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 6.50...7.10
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 78.50...79.50

Shutoff
electromagnet Volt: 24
Dispersion cm3/: 3.5
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 43.50...44.50

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 3.5
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1425
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 22.00...28.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...110.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 3.60...4.40
mm: (3.10...4.90)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.60...3.00
mm: (1.90...3.70)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 0.10...0.90
mm: (0.00...1.40)

Shutoff
electromagnet Volt: 24
5th speed 1/min: 1250
Charge press. hPa: 1000
TD travel mm: 3.70...4.50
mm: (3.20...5.00)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 6.50...7.10

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump pressure bar: 7.70...8.30

Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 75.06...119.54
quantity cm³/10s: (75.06...119.54)
2nd speed 1/min: 1250
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Overflow : 97.30...180.70
quantity cm³/10s: (97.30...180.70)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600
Charge-air pressure-setting point hPa: 500*
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 63.00...64.00
1000s.: (59.50...67.50)

2nd speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

5th speed 1/min: 1425
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 22.00...28.00
1000s.: (19.00...31.00)

9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...73.00
1000s.: (68.00...75.00)

10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 71.00...75.00
1000s.: (69.50...76.50)

12th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quynity cm³/: 78.50...79.50
1000s.: (75.50...82.50)

18th speed 1/min: 600
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 43.50...44.50
1000s.: (40.50...47.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 13.00...17.00
1000S.: (10.00...20.00)
Dispersion cm3/: 3.5
1000S.: (5.0)

2nd speed 1/min: 475
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 60.00...110.00
1000S.: (60.00...110.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 30.00...50.00
1000S.: (30.00...50.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 60.00...110.00
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.8
KF mm: KOT
MS mm: 0.7...1.1

Remarks:

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Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 18.03.92
replaces : 09.11.88
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R173-8
Type number : 0 460 426 101
Customer Part-No. :

Customer-specific information
Customer : CUMMINS/GB

Engine : 6 BTA-590
Speed 1/min: 1250

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 U27

Opening
Pressure bar: 247.00...253.00

Test inj. tubing : Lochduese 0,5 mm

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 1.40...1.80

Supply-pump pressure

Speed 1/min: 750
Charge press. hPa: 1000
Setting value bar: 3.20...3.80

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 82.00...83.00
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 40.00...41.00

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 4.00...8.00
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 65.00...71.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...120.00
mind 1000S.: 70.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
Charge press. hPa: 1000
TD travel mm: 2.30...3.10
mm: (2.00...3.40)

3rd speed 1/min: 750
Charge press. hPa: 1000
TD travel mm: 1.40...1.80
mm: (0.90...2.30)

4th speed 1/min: 600
Charge press. hPa: 1000
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 2.10...2.70
bar: (1.90...2.90)
2nd speed 1/min: 750

Charge press. hPa: 1000
 Supply-pump
 pressure bar: 3.20...3.80
 bar: (3.00...4.00)
 3rd speed 1/min: 1050
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.30...4.90
 bar: (4.10...5.10)

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1250
 Charge press. hPa: 1000
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 450
 Del. quantity cm³/: 67.00...68.00
 1000S.: (63.00...72.00)
 2nd speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1330
 Charge press. hPa: 1000
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)
 5th speed 1/min: 1300
 Charge press. hPa: 1000
 Del. quantity cm³/: 65.00...71.00
 1000S.: (62.00...74.00)
 9th speed 1/min: 1250
 Charge press. hPa: 1000
 Del. quantity cm³/: 73.50...76.50
 1000S.: (72.00...78.00)
 10th speed 1/min: 1050
 Charge press. hPa: 1000
 Del. quantity cm³/: 78.00...81.00
 1000S.: (76.50...82.50)
 12th speed 1/min: 750
 Charge press. hPa: 1000
 Del. quantity cm³/: 82.00...83.00
 1000S.: (79.50...85.50)
 18th speed 1/min: 500
 Charge press. hPa: 1000
 Del. quantity cm³/: 40.00...41.00
 1000S.: (36.00...45.00)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 Del. quantity cm³/: -4.00...4.00

Delivery-quant. and breakaway char.:

Inj.-qty.values,temp.-compensated temperatura

1st speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 450
 Del. quantity cm³/: 67.00...68.00
 1000S.: (63.00...72.00)
 2nd speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1330
 Charge press. hPa: 1000
 Del. quantity cm³/: 15.50...55.50
 1000S.: (15.50...55.50)
 5th speed 1/min: 1300
 Charge press. hPa: 1000
 Del. quantity cm³/: 65.00...71.00
 1000S.: (62.00...74.00)
 9th speed 1/min: 1250
 Charge press. hPa: 1000
 Del. quantity cm³/: 73.50...76.50
 1000S.: (72.00...78.00)
 10th speed 1/min: 1050
 Charge press. hPa: 1000
 Del. quantity cm³/: 78.00...81.00
 1000S.: (76.50...82.50)
 12th speed 1/min: 750
 Charge press. hPa: 1000
 Del. quantity cm³/: 82.00...83.00
 1000S.: (79.50...85.50)
 18th speed 1/min: 500
 Del. quantity cm³/: 40.00...41.00
 1000S.: (36.00...45.00)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 Del. quantity cm³/: 82.00...90.00
 1000S.: (86.00...86.00)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1250
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
 Del. quantity cm³/: 4.00...8.00
 1000S.: (1.00...11.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 500
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 200
Del. quantity cm³/: 60.00...110.00
1000s.: (60.00...110.00)

2nd speed 1/min: 370
Del. quantity cm³/: 20.00...60.00
1000s.: (20.00...60.00)

4th speed 1/min: 100
Del. quantity cm³/: 70.00...120.00
1000s.: (70.00...120.00)

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Copl. date: : 263
Edition : 14.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R402
Type number : 0 460 426 166
Customer Part-No. :
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6 BTA- 590 I

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.5
mm: $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Charge press. hPa: 1000
Setting value mm: 4.80...5.20
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900
Charge press hPa: 1000
Setting value bar: 4.70...5.30
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 71.50...72.50

Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000S.: 51.00...52.00

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000S.: 7.00...13.00

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1180
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 47.00...53.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 65.00...115.00
mind 1000S.: 65.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 6.20...7.00
mm: (5.90...7.30)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 4.80...5.20
mm: (4.30...5.70)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 3.50...4.30
mm: (3.20...4.60)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 750
Charge press. hPa: 1000
Supply-pump pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 24
2nd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump pressure bar: 4.70...5.30

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 5.50...6.10
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 750
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24

Overflow quantity : 55.60...139.00
cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting point hPa: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 64.50...65.50
1000S.: (61.00...69.00)

2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 22.50...37.50
1000S.: (22.50...37.50)

5th speed 1/min: 1180
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 47.00...53.00
1000S.: (44.00...56.00)

9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 59.50...62.50
1000S.: (58.00...64.00)

10th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 61.50...64.50
1000S.: (59.50...66.50)

12th speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quynity cm³/: 71.50...72.50
1000S.: (69.00...75.00)

18th speed 1/min: 700
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 51.00...52.00
1000S.: (47.50...55.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100

Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 7.00...13.00
1000S.: (5.00...15.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...120.00
1000S.: (70.00...120.00)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 10.00...50.00
1000S.: (10.00...50.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 65.00...115.00
1000S.: (65.00...115.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4

MS mm: 1.3...1.7

Remarks:
Heavy-duty fuel-injection pump for 2
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 14.04.92
replaces : 12.07.91
Calibrating oil : ISO-4113

Injection pump : VE6/12F1300R377-1
Type number : 0 460 426 174
Customer Part-No. :

Customer-specific information
Customer : CUMMINS

Engine : 6 BT 5.9 A

Power KW: 217
Speed 1/min: 2600

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 2.35
mm: $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values

H07

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 1.40...1.80
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1200
Charge press hPa: 1000
Setting value bar: 8.10...8.70
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm³/
1000s.: 73.50...74.50
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000s.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000s.: 50.50...51.50
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 9.0
1000s.: (9.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000s.: 9.00...11.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000s.: (7.0)

Full-load speed regulation

Speed 1/min: 1400
Charge press hPa: 1000
Del. quantity cm³/
1000s.: 54.00...60.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...140.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
Charge press hPa: 1000
TD travel mm: 1.70...2.50
mm: (1.40...2.80)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1200
Charge press hPa: 1000
TD travel mm: 1.40...1.80
mm: (0.90...2.30)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.80...5.40

Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.10...8.70

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.60...9.20

Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 24
Overflow : 104.20...145.90
quantity cm³/10s: (89.20...160.90)
2nd speed 1/min: 1300
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Overflow : 111.20...194.60
quantity cm³/10s: (96.20...209.60)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting
point hPa: 475
LDA-stroke mm: -
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 63.00...64.00
1000S.: (59.50...67.50)

2nd speed 1/min: 1600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1480
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.00...55.00
1000S.: -

5th speed 1/min: 1400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 54.00...60.00
1000S.: (51.00...63.00)

9th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 66.00...69.00
1000S.: (64.50...70.50)

10th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 69.50...72.50
1000S.: (67.50...74.50)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 73.50...74.50
1000S.: (71.00...77.00)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 50.50...51.50
1000S.: (47.00...55.00)

20th speed 1/min: 500
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: -
1000S.: (81,50...91,50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 9.00...11.00
1000S.: (5.00...15.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 50.00...110.00
1000S.: (50.00...110.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...140.00
1000S.: (60.00...140.00)

Shutoff electromagnet:

H09

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT
MS	mm: 1,2...1,6
SVS max.	mm: 2,2
XK	mm: 21,8...23,8
XL	mm: 10,2...13,6

Remarks:

: C.D.C. # 391 6987

:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 14.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R469
Type number : 0 460 426 198
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8060.45.4180

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000

H10

Setting value mm: 2.20...2.60
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 6.20...6.80
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 72.50...73.50

Shutoff
electromagnet Volt: 24
Dispersion cm3/: 3.5
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 40.50...41.50

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 4.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 47.00...53.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...110.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.20...2.60
mm: (1.50...3.30)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 0.80...1.60
mm: (0.30...2.10)

Shutoff
electromagnet Volt: 24
5th speed 1/min: 1250
Charge press. hPa: 1000
TD travel mm: 3.70...4.50
mm: (3.20...5.00)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 6.20...6.80

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump pressure bar: 7.70...8.30

Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 75.06...119.54

quantity cm³/10s: (75.06...119.54)
2nd speed 1/min: 1250
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Overflow : 97.30...180.70
quantity cm³/10s: (97.30...180.70)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600*
Charge-air pressure-setting point hPa: 500

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 59.50...60.50
1000S.: (56.00...64.00)

2nd speed 1/min: 1550
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1400
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 47.00...53.00
1000S.: (44.00...56.00)

8th speed 1/min: 1325
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 54.00...70.00
1000S.: (54.00...70.00)

9th speed 1/min: 1250
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 66.50...69.50
1000S.: (64.50...71.50)

10th speed 1/min: 1000
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 67.50...71.50
1000S.: (66.00...73.00)

12th speed 1/min: 700
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quynity cm³/: 72.50...73.50
1000S.: (69.50...76.50)

18th speed 1/min: 600
Charge press. hPa: -

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 40.50...41.50
1000S.: (37.50...44.50)

20th speed 1/min: 600
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 74.50...79.50
1000S.: (72.50...81.50)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 4.0
1000S.: (5.0)

2nd speed 1/min: 475
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 20.00...50.00
1000S.: (20.00...50.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -

H12

KF mm: KOT
MS mm: 0.7...1.1

Remarks:

:

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 13.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R419-2
Type number : 0 460 426 199
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6 BTAA 5.9

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery block
Piston stroke mm: 1.25
mm: +0.02(0.06)
Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.60...2.00

H13

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 6.30...6.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 76.00...77.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 57.50...58.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 8.50...12.50

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1320
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 68.00...74.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 100.00...160.00
mind 1000S.: 100.0
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
 Charge press hPa: 1000
 TD travel mm: 2.30...3.10
 mm: (2.00...3.40)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1000
 Charge press hPa: 1000
 TD travel mm: 1.60...2.00
 mm: (1.10...2.50)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 850
 Charge press hPa: 1000
 TD travel mm: 0.80...1.60
 mm: (0.50...1.90)

Shutoff
 electromagnet Volt: 12
 8th speed 1/min: 450
 Charge press. hPa: -
 TD travel mm: 2.00...3.00
 mm: (1.80...3.20)

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 850
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.70...6.30

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 6.30...6.90

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.40...8.00

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 3.90...4.50

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm3/10s: (26.70...98.40)
 2nd speed 1/min: 1250
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
 Charge-air pressure-setting
 point hPa: 230
 LDA-stroke mm: 7.0
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 64.00...65.00
 1000s.: (60.50...68.50)

2nd speed 1/min: 1460
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...3.00
 1000s.: (0.00...3.00)

3rd speed 1/min: 1405
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 15.00...45.00
 1000s.: (15.00...45.00)

5th speed 1/min: 1320
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 68.00...74.00
 1000s.: (65.00...77.00)

9th speed 1/min: 1250
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 75.50...78.50
 1000s.: (74.00...80.00)

10th speed 1/min: 1150
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 82.00...85.00
 1000s.: (80.00...87.00)

12th speed 1/min: 850
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm3/: 76.00...77.00
 1000s.: (73.50...79.50)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 58.50...59.50
1000S.: (55.00...63.00)
20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 78.00...86.00
1000S.: (78.00...86.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.50...12.50
1000S.: (5.50...15.50)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 470
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 110.00...170.00
1000S.: (110.00...170.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...80.00
1000S.: (50.00...80.00)

4th speed 1/min: 100

H15

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 100.00...160.00
1000S.: (100.00...160.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: KOT
MS mm: 0.8...1.0
LDA stroke mm: 7.0

Remarks:
: C.D.C. # 392 1613

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 13.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F11COR371-2
Type number : 0 460 426 201
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : 6 T 590

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery block
Piston stroke mm: 1.5
mm: +0.02(0.06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 700
Setting value mm: 1.30...1.70

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 700
Setting value bar: 4.70...5.30
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 76.00...77.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 8.00...12.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
Del. quantity cm3/
1000S.: 45.00...51.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 80.00...120.00
mind 1000S.: 80.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 3.90...4.70
mm: (3.60...5.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 700
TD travel mm: 1.30...1.70
mm: (0.80...2.20)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 500
 TD travel mm: 0.00...0.70
 mm: (0.00...1.00)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump
 pressure bar: 3.80...4.40
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 700
 Supply-pump
 pressure bar: 4.70...5.30
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Supply-pump
 pressure bar: 6.50...7.10
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1230
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1190
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...30.00
 1000S.: (10.00...30.00)
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1160
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 45.00...51.00
 1000S.: (42.00...54.00)
 9th speed 1/min: 1100

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 65.50...68.50
 1000S.: (64.00...70.00)
 12th speed 1/min: 700
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 76.00...77.00
 1000S.: (74.50...78.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 68.00...76.00
 1000S.: (66.00...78.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8.00...12.00
 1000S.: (5.00...15.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 550
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 80.00...140.00
 1000S.: (80.00...140.00)

2nd speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...80.00
 1000S.: (40.00...80.00)

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 80.00...120.00
 1000S.: (80.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 0.8...1.2

Remarks:
Heavy-duty fuel-injection pump for 06
DI-engines; only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 14.04.92
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE4/8F2400R348
Type number : 0 460 484 027
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 086-1.6l

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250

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Setting value bar: 5.00...5.60
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 31.30...32.30
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 7.00...9.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 3.50...4.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2650
Del. quantity cm3/
1000S.: 12.00...16.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...85.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: 5.00...11.00 *
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250

TD-travel
difference mm: 0.60...0.80 *
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250
TD travel mm: 7.30...8.10
mm: (7.00...8.40)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.10...3.50
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
TD travel mm: 1.10...1.90
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3.40...4.00

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 5.00...5.60

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2250
Supply-pump
pressure bar: 7.30...7.90
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...16.00
1000S.: (10.00...18.00)

8th speed 1/min: 2550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 19.50...29.50
1000S.: (18.50...30.50)

9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.50...31.50
1000S.: (28.30...32.70)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31.30...32.30
1000S.: (29.60...34.00)

20th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 23.00...26.00
1000S.: (21.50...27.50)

Charge press. hPa: 400
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 24.0...30.0
1000S.: (21.0...33.0)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...9.00
1000S.: (4.00...12.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 8.50...11.50
1000S.: (6.00...14.00)

High Idle:

1st speed 1/mi: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...9.00
1000S.: (4.00...12.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.50...4.50
1000S.: (2.00...6.00)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.00...7.00
1000S.: (3.50...8.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1250
Inj.-qty. cm³/: + 0.0...3.0 #
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 1.30...1.70 #
difference mm: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Supply pump-
pressure : 0.90...1.30 #
difference bar: (0.70...1.50)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...35.00
1000S.: (15.00...35.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: 5,3...5,7
MS mm: 1,4...1,6

Remarks:

:
On initial measurement, screw in
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1.4 A
Edition : 13.04.92
replaces : 02.12.91
Calibrating oil : ISO-4113

Injection pump : VE4/8F2450L331-2
Type number : 0 460 484 033
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 031.2

Power kW: 35.0

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1600
Setting value mm: 3.60...4.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1600
Setting value bar: 5.90...6.50
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del. quantity cm3/
1000S.: 24.30...25.30
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575
Del. quantity cm3/
1000S.: 2.50...3.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2700
Del. quantity cm3/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 32.00...82.00
mind 1000S.: 32.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: 5.50...11.50
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 0.60...0.80
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250

Supply pump
pressure
difference bar: 0.80...1.20
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1600
TD travel mm: 3.60...4.00
mm: (3.10...4.50)
electromagnet Volt: 12
2nd speed 1/min: 2250
TD travel mm: 6.40...7.20
mm: (6.10...7.50)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
TD travel mm: 0.60...1.40
mm: (0.30...1.70)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 3.60...4.20
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1600
Supply-pump
pressure bar: 5.90...6.50
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2250
Supply-pump
pressure bar: 7.70...8.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.80...98.30)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.00
quantity cm³/10s: (40.70...153.90)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2975
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)

5th speed 1/min: 2700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000S.: (8.00...16.00)

8th speed 1/min: 2575
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.50...25.50
1000S.: (14.50...26.50)

9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.50...24.50
1000S.: (21.30...25.70)

10th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17.00...22.00
1000S.: (14.50...24.50)

12th speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 24.30...25.30
1000S.: (21.80...27.80)

20th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.50...23.50
1000S.: (19.00...25.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.50...11.50
1000S.: (6.50...14.50)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 5.50...8.50
1000S.: (3.00...11.00)
Dispersion cm³/: 2.0
1000S.: (3.0)

Residual:

1. Rotacao 1/min: 575
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...3.50
1000S.: (1.00...5.00)
2nd speed 1/min: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.00...5.00
1000S.: (1.50...6.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/: 5.50...11.50
difference 1000S.: (4.50...12.50)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.60...0.80
difference mm: (0.60...0.80)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.80...1.20
difference bar: (0.60...1.40)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...80.00
1000S.: (30.00...80.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.00...82.00
1000S.: (32.00...82.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.6...6.0
MS mm: 1.2...1.6

Remarks:
Overflow restriction 0.55 mm - Part No.
..303 :

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 1.9 C1
Edition : 14.10.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/8F1500R401
Type number : 0 460 484 036
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 028.B 1.9L.

Power KW: 38

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 1.0
(from BDC): $\pm 0.02(0.04)$

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

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Speed 1/min: 1400
Setting value bar: 5.80...6.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
Del. quantity cm³/
1000S.: 34.50...35.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.0
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 430
Del. quantity cm³/
1000S.: 6.00...10.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.0
1000S.: (3.0)

Start:

Speed 1/min: 100
Del. quantity cm³/: 35.00...55.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1400
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
TD travel mm: 1.60...2.40
mm: (1.30...2.70)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3.70...4.30
bar: (3.50...4.50)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1400

Supply-pump
pressure bar: 5.80...6.40
bar: (5.60...6.60)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (27.80...97.30)
2nd speed 1/min: 1400
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm3/10s: (41.70...152.90)
Shutoff
electromagnet Volt: 12

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1600
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...6.00)
4th speed 1/min: 1570
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...12.00)
5th speed 1/min: 1550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 8.50...12.00
1000S.: (1.50...22.50)
6th speed 1/min: 1530
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 16.50...28.50
1000S.: (12.00...33.00)
7th speed 1/min: 1510
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 27.00...39.00
1000S.: (22.50...43.50)
12th speed 1/min: 1400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 34.50...35.50
1000S.: (32.80...37.20)
20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 25.20...28.20
1000S.: (23.70...29.70)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 430
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 430
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.00...10.00
1000S.: (4.00...12.00)

Dispersion cm3/: 2.0
1000S.: (3.0)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 30.00...64.00
1000S.: (30.00...64.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...55.00
1000S.: (35.00...55.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.2...5.6
MS mm: 1.1...1.5
XK mm: 17.0...19.0
XL mm: 11.8...15.2

Remarks:

...



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2,0 P4
Edition : 14.04.92
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R317-3
Type number : 0 460 484 041
Customer Part-No. :

Customer-specific information
Customer : RNUR

Engine : F8Q - 742

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.10...4.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250

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Setting value bar: 4.50...5.10
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 31.00...32.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 410
Del. quantity cm3/
1000S.: 6,5...10,5

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2,5
1000S.: (3,0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.00...5.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm3/
1000S.: 22.00...28.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: 9.00...13.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250

TD-travel
difference mm: 0.30...0.50
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.40...8.20
mm: (7.10...8.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 4.10...4.50
mm: (3.60...5.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
TD travel mm: 1.70...2.50
mm: (1.40...2.80)

Shutoff
electromagnet Volt: 12
8th speed 1/min: 500
TD travel mm: 1.90...4.30 B
mm: (1.90...4.30)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
9th speed 1/min: 310
TD travel mm: 0.60...3.00 A
mm: (0.60...3.00)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump
pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 4.50...5.10

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.40...7.00
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2950
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)
3rd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...15.00
1000S.: (6.00...16.00)
5th speed 1/min: 2450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.00...28.00
1000S.: (21.00...29.00)

9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31.50...33.50
1000S.: (30.20...34.80)
10th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.30...32.30
1000S.: (29.00...33.60)

11th speed 1/min: 1625
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.70...32.70
1000S.: (28.90...33.50)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31.00...32.00
1000S.: (29.20...33.80)

20th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.10...33.10
1000S.: (29.30...33.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 410

Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 410
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.50...10.50
1000S.: (4.50...12.50)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 7.00...11.00
1000S.: (5.00...13.00)

Residual:

1.Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 1.00...5.00
1000S.: (1.00...5.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm3/ : 7.70...9.70 *
difference 1000S.: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Inj.-qty. cm3/: 9.00...13.00#
difference 1000S.: -
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
Inj.-qty. cm3/: +2.00...8.00'
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.30...0.50 #
difference mm: (0.30...0.50)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250

TD-travel : 0.10...0.50 '
difference mm: (0.00...0.60)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.10...0.30 *
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Supply pump-
pressure : 0.20...0.60 '
difference bar: (0.20...0.60)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.00...75.00
1000S.: (45.00...75.00)

2nd speed 1/min: 310
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...45.00
1000S.: (15.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 40.00...70.00
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: 5,3...5,7
MS mm: 1,1...1,5
SVS max. mm: 2,7

Remarks:

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

A = KSB adjustment point

B = KSB curve point



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 10.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R463
Type number : 0 460 484 051
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : M708 BA/FA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 5.10...5.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del. quantity cm3/
1000S.: 28.30...29.30
Shutoff
electromagnet Volt: 12
Dispersion cm3/: (2.5)
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.5
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
1000S.: 17.00...23.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 37.00...63.00
mind 1000S.: 37.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 7.00...13.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1500
TD-travel
difference mm: 0.70...0.90
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2300
TD travel mm: 8.60...9.40
mm: (8.30...9.70)

electromagnet Volt: 12
2nd speed 1/min: 1500
TD travel mm: 5.10...5.50
mm: (4.60...6.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
TD travel mm: 1.60...2.40
mm: (1.10...2.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2300
Supply-pump
pressure bar: 7.40...8.00

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Supply-pump
pressure bar: 5.30...5.90

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 600
Supply-pump
pressure bar: 3.10...3.70

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.00...83.00
quantity cm³/10s: (26.00...98.00)
2nd speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Overflow : 55.00...139.00
quantity cm³/10s: (40.00...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.30...29.30
1000S.: (26.50...31.10)
2nd speed 1/min: 2900
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...1.60
1000S.: (0.00...1.60)

3rd speed 1/min: 2700

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 1.00...9.00
1000S.: (0.00...10.00)

5th speed 1/min: 2500

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17.00...23.00
1000S.: (14.00...26.00)

9th speed 1/min: 2300

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.40...31.80
1000S.: (28.20...33.10)

10th speed 1/min: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.30...30.70
1000S.: (27.20...31.80)

12th speed 1/min: 600

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.30...31.30
1000S.: (26.30...33.30)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000S.: (7.00...17.00)

Dispersion cm³/: 2.5
1000S.: (3.0)

2nd speed 1/min: 450

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...8.50)

4th speed 1/min: 550

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...2.50
1000S.: (0.00...2.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
2nd speed 1/min: 1500
3rd speed 1/min: 1500
Inj.-qty. cm3/: 6.00...12.00
difference 1000S.: (6.00...12.00)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1500
5th speed 1/min: 1500

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.70...0.90
difference mm: (0.70...0.90)
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
3rd speed 1/min: 1500
4th speed 1/min: 1500

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500
2nd speed 1/min: 1500
3rd speed 1/min: 1500
4th speed 1/min: 1500

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 48.00...74.00
1000S.: (48.00...74.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...45.00
1000S.: (35.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 55.00...81.00
1000S.: (55.00...81.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7

MS

mm: 1.6...2.0

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,9 K2
Edition : 06.12.91
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE4/8F2300R464
Type number : 0 460 484 052

Customer-specific information
Customer : FIAT TIPO/TEMPRA

Engine : M 705

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 5,9...6,3
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 5,5...6,1

J07

Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del. quantity cm3/
1000S.: 30,5...31,5

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2,5
1000S.: -

Low-idle speed regulation

Speed 1/min: 390
Del. quantity cm3/
1000S.: 8,0...12,0

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2,5
1000S.: -

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
1000S.: 20,0...26,0

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: -
mind 1000S.: 37,0

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Inj.-qty. cm3/
difference 1000S.: 6,0...12,0 *

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)

1.Speed 1/min: 1500
TD-travel
difference mm: 1,0...1,2 *

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 1,7...2,5
mm: (1,4...2,8)
electromagnet Volt: 12
2nd speed 1/min: 1500
TD travel mm: 5,9...6,3
mm: (5,4...6,8)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
TD travel mm: 8,6...9,4
mm: (8,3...9,7)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 2300
TD travel mm: 9,4...10,2
mm: (9,1...10,5)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 2,9...3,5
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Supply-pump pressure bar: 5,5...6,1
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2300
Supply-pump pressure bar: 7,7...8,3
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41,6...83,3
(26,6...98,3)
2nd speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55,5...138,8
(40,5...153,8)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0,0...1,6
1000S.: -
2nd speed 1/min: 2650

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2,0...10,0
1000S.: -

3rd speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20,0...26,0
1000S.: (19,0...27,0)

4th speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31,3...33,7
1000S.: (30,2...34,8)

5th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30,8...33,2
1000S.: (29,7...34,3)

6th speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30,5...31,5
1000S.: (28,7...33,3)

7th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31,5...34,5
1000S.: (30,0...36,0)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 390
Del. quantity cm³/: 0,0...3,0
1000S.: -

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 390
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8,0...12,0
1000S.: (5,0...15,0)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0,0...3,0
1000S.: -

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/: 6,0...8,0 #
difference 1000S.: -

Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500
Supply pump-
pressure : 0,1...0,3
difference bar: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40,0...60.00
1000S.: -

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33,00...43,00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: 5,3...5,7
MS mm: 1,3...1,7
XK mm: 17,0...19.0
XL mm: 10.5...13.9

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1.9 K11
Edition : 13.04.92
replaces : 31.01.92
Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R425-1
Type number : 0 460 484 054
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD9AL - D70/N2/N3

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 0.3
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.50...3.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 30.00...31.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 2.50...3.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2650
Del. quantity cm3/
1000S.: 9.00...13.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 42.00...68.00
mind 1000S.: 42.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 2.00...8.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 2.00...3.00
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250

Supply pump

pressure difference bar: 1.20...1.80
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 6.70...7.50
mm: (6.40...7.80)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.50...3.90
mm: (3.00...4.40)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.20...2.00
mm: (0.90...2.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 3.30...3.90
bar: (3.10...4.10)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump pressure bar: 5.70...6.30
bar: (5.50...6.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2200
Supply-pump pressure bar: 8.20...8.80
bar: (8.00...9.00)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
cm³/10s: (27.80...97.30)
2nd speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...138.90
cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)

5th speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...13.00
1000S.: (7.00...15.00)

8th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 19.50...25.50
1000S.: (17.50...27.50)

9th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.50...34.50
1000S.: (31.30...35.70)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...31.00
1000S.: (28.30...32.70)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...33.00
1000S.: (28.50...34.50)

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 2200
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff

electromagnet Volt: 12
Del. quantity cm3/: 6.50...8.50
1000S.: (3.50...11.50)

High Idle:

1st speed 1/mi: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 8.50...10.50
1000S.: (5.50...13.50)

Residual:

1. Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.50...3.50
1000S.: (1.00...5.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm3/ : 2.00...8.00
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 2.00...3.00
difference mm: (1.90...3.10)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 1.20...1.80
difference bar: (1.10...1.90)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 225
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...71.00
1000S.: (37.00...71.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 42.00...68.00
1000S.: (42.00...68.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: KOT
MS mm: 1.2...1.6

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1.9 K13
Edition : 31.01.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R425-2
Type number : 0 460 484 055
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD9A-N2 - BVA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 0.3
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 6.20...6.80
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 30.00...31.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 2.50...3.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2650
Del. quantity cm3/
1000S.: 9.00...13.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 42.00...68.00
mind 1000S.: 42.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 2.00...8.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 1.50...2.70
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250

Supply pump
pressure
difference bar: 0.80...1.40
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.40...3.80
mm: (2.90...4.30)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.00...1.80
mm: (0.70...2.10)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 4.40...5.00
bar: (4.20...5.20)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 6.20...6.80
bar: (6.00...7.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2200
Supply-pump
pressure bar: 8.50...9.10
bar: (8.30...9.30)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000s.: (0.00...6.00)
5th speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...13.00
1000s.: (7.00...15.00)
8th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 19.50...25.20
1000s.: (17.50...27.50)
9th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.50...34.50
1000s.: (31.30...35.70)
12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...31.00
1000s.: (28.30...32.70)
20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...33.00
1000s.: (28.50...34.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 2200
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff

electromagnet Volt: 12
Del. quantity cm3/: 6.50...8.50
1000S.: (3.50...11.50)

High Idle:

1st speed 1/mi: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 8.50...10.50
1000S.: (5.50...13.50)

Residual:

1. Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.50...3.50
1000S.: (1.00...5.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm3/ : 2.00...8.00
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 1.60...2.60
difference mm: (1.50...2.70)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.80...1.40
difference bar: (0.70...1.50)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 225
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...71.00
1000S.: (37.00...71.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 42.00...68.00
1000S.: (42.00...68.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: KOT
MS mm: 1.2...1.6

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 15.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R171-3
Type number : 0 460 484 056
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD7 L

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 0.3
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.30...4.90
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 28.00...29.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 3.50...4.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2440
Del. quantity cm3/
1000S.: 19.00...25.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 42.00...82.00
mind 1000S.: 42.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: 7.00...11.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 0.90...1.10
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.20...8.00
mm: (6.90...8.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.40...3.80
mm: (3.10...4.10)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.50...1.30
mm: (0.20...1.60)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 3.00...3.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 4.30...4.90

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.40...7.00

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2690
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.50...10.50
1000S.: (3.50...10.50)

3rd speed 1/min: 2540
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 11.50...17.50
1000S.: (10.00...19.00)

5th speed 1/min: 2440
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 19.00...25.00
1000S.: (18.00...26.00)

9th speed 1/min: 2250
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 27.50...29.50
1000S.: (26.20...30.80)

10th speed 1/min: 2000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 27.50...29.50
1000S.: (26.20...30.80)

11th speed 1/min: 800
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 28.00...30.00
1000S.: (26.00...32.00)

12th speed 1/min: 1250
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 28.00...29.00
1000S.: (26.20...30.80)

20th speed 1/min: 500
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 28.00...31.00
1000S.: (26.50...32.50)

Mech. shutoff:
Mech. Abst.ellung:

1st speed 1/min: 2250
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 8.00...12.00
1000S.: (6.00...14.00)

High Idle:

1st speed 1/mi: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 8.00...12.00
1000S.: (6.00...14.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.50...4.50
1000S.: (2.50...5.50)

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm3/ : 7.00...11.00#
difference 1000S.: (4.00...14.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Inj.-qty. cm3/: +2.00...8.00*
difference 1000S.: +(2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.90...1.10 #
difference mm: (0.90...1.10)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD-travel : 1.00...2.00 *
difference mm: (0.90...2.10)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.50...1.10 *
difference bar: (0.40...1.20)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 44.00...84.00
1000S.: (34.00...74.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 14.00...34.00
1000S.: (4.00...64.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 42.00...82.00
1000S.: (42.00...82.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 1.2...1.6

Remarks:

:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 09.04.92
replaces : 01.85
Calibrating oil : ISO 4113

Injection pump : VE4/9F2150L31-1
Type number : 0 460 494 133

Customer-specific information
Customer : MOTORI VM

Engine : HR 488 HT

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 688 901 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1900
Charge press. hPa: 800
Setting value mm: 6,40...6,80
Shutoff
electromagnet Volt: 12.0

Supply-pump pressure

Speed 1/min: 1900
Charge press hPa: 800

Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1600
Charge press. hPa: 800
Del. quantity cm³/
1000S.: 46.50...47.50

Shutoff
electromagnet Volt: 12.0
Dispersion cm³/: 3,0
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 31.50...32.50

Shutoff
electromagnet Volt: 12.0

Low-idle speed regulation

Speed 1/min: 400
Charge press hPa: -
Del. quantity cm³/
1000S.: 8.00...12.00

Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 3.0
1000S.: -

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 800
Del. quantity cm³/
1000S.: 27.50...33.50

Shutoff
electromagnet Volt: 12.0

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm³/: -
mind 1000S.: 44.0
Shutoff
electromagnet Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press hPa: 800

TD travel mm: 1.30...2.10
 mm: (1.00...2.40)
 electromagnet Volt: 12.0
 2nd speed 1/min: 1900
 Charge press hPa: 800
 TD travel mm: 6.40...6.80
 mm: (5.90...7.30)
 Shutoff
 electromagnet Volt: 12.0
 3rd speed 1/min: 2150
 Charge press hPa: 800
 TD travel mm: 7.50...8.30
 mm: (7.20...8.60)
 Shutoff
 electromagnet Volt: 12.0
 Supply-pump pressure characteristic:
 1st speed 1/min: 400
 Charge press. hPa: 800
 Supply-pump pressure bar: 2.00...2.60
 Shutoff
 electromagnet Volt: 12.0
 2nd speed 1/min: 1900
 Charge press. hPa: 800
 Supply-pump pressure bar: 5.70...6.30
 Shutoff
 electromagnet Volt: 12.0
 3rd speed 1/min: 2150
 Charge press. hPa: 800
 Supply-pump pressure bar: 6.30...6.90
 Shutoff
 electromagnet Volt: 12.0
 Overflow quantity at overflow valve:
 1st speed 1/min: 600
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12.0
 Overflow : 42.00...83.00
 quantity cm³/10s: (27.00...98.00)
 2nd speed 1/min: 2150
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12.0
 Overflow : 55.00...138.00
 quantity cm³/10s: (40.00...153.00)
 Delivery-quant. and breakaway char.:
 1st speed 1/min: 600
 Charge-air pressure-setting point hPa: 270
 LDA-stroke mm: 3.8

Shutoff
 electromagnet Volt: 12.0
 Del. quantity cm³/: 39.30...41.30
 1000S.: (37.60...42.00)
 2nd speed 1/min: 2600
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12.0
 Del. quantity cm³/: 0.0...2.0
 1000S.: -
 3rd speed 1/min: 2450
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12.0
 Del. quantity cm³/: 0.0...10.0
 1000S.: -
 4th speed 1/min: 2300
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12.0
 Del. quantity cm³/: 27.50...33.50
 1000S.: (26.50...34.50)
 5th speed 1/min: 2150
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12.0
 Del. quantity cm³/: 40.00...43.00
 1000S.: (39.2...43.80)
 6th speed 1/min: 1600
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12.0
 Del. quantity cm³/: 46.50...47.50
 1000S.: (44.70...49.30)
 7th speed 1/min: 600
 Charge press. hPa: 270
 Shutoff
 electromagnet Volt: 12.0
 Del. quantity cm³/: 39.30...41.30
 1000S.: (37.60...42.00)
 8th speed 1/min: 600
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12.0
 Del. quantity cm³/: 31.50...32.50
 1000S.: (29.80...34.20)
 Mech. shutoff:
 Idle delivery:
 1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 12.0
 Del. quantity cm³/: 8.00...12.0
 1000S.: (6.00...14.00)
 Dispersion cm³/: 3.0
 1000S.: -
 2nd speed 1/min: 500

Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 0.0...6.00
1000s.: -
3rd speed 1/min: 800
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 0.0...2.0
1000s.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 44.00...
1000s.: -

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 0.0...43.0
1000s.: -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3.3
KF	mm: 5.7...5.9
MS	mm: 0.7...0.9
SVS max.	mm: 5.6
LDA stroke	mm: 3.8
XK	mm: 20.2...22.2
XL	mm: 8.7...12.1

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 13.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2200R416
Type number : 0 460 494 273
Customer Part-No. :

Customer-specific information
Customer : RNUR

Engine : J8S - 890

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 043

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.2
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 0.3
mm: $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 800

J22

Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 800
Setting value bar: 5.10...5.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
Charge press. hPa: 800
Del. quantity cm³/
1000S.: 47.20...48.20
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 37.00...38.00
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm³/
1000S.: 7.00...11.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.5
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 800
Del. quantity cm³/
1000S.: 23.00...29.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...100.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
 Charge press hPa: 800
 TD travel mm: 6.20...7.00
 mm: (6.20...7.00)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1400
 Charge press hPa: 800
 TD travel mm: 4.00...4.40
 mm: (3.50...4.90)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1000
 Charge press hPa: 800
 TD travel mm: 1.90...2.70
 mm: (1.60...3.00)

Shutoff
 electromagnet Volt: 12
 6th speed 1/min: 1800
 Charge press. hPa: 800
 TD travel mm: 5.70...6.50
 mm: (5.40...6.80)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: -
 Supply-pump pressure bar: 2.60...3.20
 bar: (2.30...3.50)

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1400
 Charge press. hPa: 800
 Supply-pump pressure bar: 5.10...5.70
 bar: (4.80...6.00)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 2000
 Charge press. hPa: 800
 Supply-pump pressure bar: 6.90...7.50
 bar: (6.60...7.80)

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm3/10s: (26.70...98.40)

2nd speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
 Charge-air pressure-setting point hPa: 200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 41.00...42.00
 1000S.: (38.50...44.50)

2nd speed 1/min: 2700
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)

3rd speed 1/min: 2500
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 2.50...17.50
 1000S.: (2.50...17.50)

5th speed 1/min: 2400
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 23.00...29.00
 1000S.: (22.00...30.00)

9th speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 44.10...45.10
 1000S.: (42.80...47.40)

12th speed 1/min: 1400
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm3/: 47.20...48.20
 1000S.: (45.40...50.00)

18th speed 1/min: 600
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 37.00...38.00
 1000S.: (34.50...40.50)

20th speed 1/min: 1000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 45.60...48.60
 1000S.: (44.10...50.10)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet Volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...11.00
1000S.: (5.00...13.00)
Dispersion cm³/: 2.5
1000S.: (3.0)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.00...7.00
1000S.: (1.00...9.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...100.00
1000S.: (40.00...100.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...100.00
1000S.: (60.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4

KF

MS

SVS max.

Remarks:

mm: 5.6...6.0

mm: 1.3...1.7

mm: 4.8

:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 13.04.92
replaces : 04.12.91
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R445
Type number : 0 460 494 278
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD 9 TE-L (Cit.

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 42.00...48.00
Electronically : 40.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 3.80...4.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 53.50...54.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 37.50...38.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Charge press hPa: -
Del. quantity cm3/
1000S.: 12,0...14.0

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2,0
1000S.: (3,0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 6.00...7.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 12.00...16.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 200
Del. quantity cm3/: 50.00...56.00
mind 1000S.: 50.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: -
Inj.-qty. cm3/
difference 1000S.: 11.00...15.00 #
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
Charge press hPa: -
TD-travel
difference mm: 0.90...1.10 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 1000
TD travel mm: 6.40...7.20
mm: (6.10...7.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 3.80...4.20
mm: (3.30...4.70)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 1.50...2.30
mm: (1.20...2.60)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.40...5.00
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.60...6.20
bar: -

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 2000
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.30...7.90
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 5.8
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 46.00...47.00
1000S.: (43.50...49.50)

2nd speed 1/min: 2750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: -

5th speed 1/min: 2575
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 12.00...16.00
1000S.: (10.00...18.00)

8th speed 1/min: 2375
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 33.00...43.00
1000S.: (32.00...44.00)

9th speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 49.50...51.50
1000S.: (48.30...52.70)

10th speed 1/min: 2000
Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 51.00...53.00
 1000S.: (49.80...54.20)
 12th speed 1/min: 1250
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 53.50...54.50
 1000S.: (51.80...56.20)
 18th speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 37.50...38.50
 1000S.: (35.00...41.00)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 46.50...49.50
 1000S.: (46.00...51.00)

Mech. shutoff:
 Mech. Abststellung:

1st speed 1/min: 2000
 Del. quantity cm³/: 0.00...3.00
 1000S.: -

Shutoff
 electromagnet volt: 12
 KSB/AFB
 valve Volt: -

Electr. shutoff:

1st speed 1/min: 400
 Del. quantity cm³/: 0.00...3.00
 1000S.: -

Shutoff
 electromagnet volt: -

Idle delivery:

Damper set qty.:

1st speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 27.00...35.00
 1000S.: -

LFG-setting:
 solidale con carcassa:
 Idle delivery:

1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 12.00...14.00
 1000S.: (9.00...17.00)

High Idle:

1st speed 1/mi: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 11.00...13.00
 1000S.: (8.00...16.00)

Residual:

1. Rotacao 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 6.00...7.00
 1000S.: (4.50...8.50)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1250
 Charge press. hPa: -
 Inj.-qty. cm³/: 2.00...8.00
 difference 1000S.: -
 Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1250
 Charge press. hPa: -
 TD-travel : 2.10...2.50
 difference mm: (1.60...3.00)
 Shutoff
 electromagnet Volt: 12

SP press.-dif.measurement:
 pompa di mandata (FP):
 1st speed 1/min: 1250
 Charge press. hPa: -
 Supply pump-
 pressure : 0.9...1.30
 difference bar: (0.7...1.50)
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

2nd speed 1/min: 380
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 25.00...45.00
 1000S.: -

3rd speed 1/min: 150
 Charge press. hPa: -

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.00...67.00
1000S.: -

4th speed 1/min: 200
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...56.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: K-OT
LDA stroke mm: 5.8

Remarks:

* Correction at adjusting nut (46)
:

Operate control lever after each
manifold-pressure compensator pressure
change.

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 14.04.92
replaces : 07.02.92
Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R432
Type number : 0 460 494 284
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 1.9L. UATL - B3

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.70...4.10
Shutoff
electromagnet Volt: 12

Supply-pump pressure

K01

Speed 1/min: 1250
Setting value bar: 5.50...6.10
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 42.00...43.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 9.0...11.0

Shutoff
electromagnet Volt: 12.0
Del. quantity cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575
Del. quantity cm3/
1000S.: 5.50...6.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2600
Del. quantity cm3/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...65.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: 4.00...10.00 *
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)

1. Speed 1/min: 1250
TD-travel
difference mm: 0.60...0.80 *
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000
TD travel mm: 6.50...7.30
mm: (6.20...7.60)
electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 3.50...3.90
mm: (3.00...4.40)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
TD travel mm: 1.40...2.20
mm: (1.10...2.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump
pressure bar: 4.30...4.90
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 5.50...6.10
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 2200
Supply-pump
pressure bar: 7.70...8.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.80...98.30)
2nd speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (40.60...153.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)

5th speed 1/min: 2600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000S.: (8.00...16.00)

8th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 21.50...31.50
1000S.: (20.50...32.50)

9th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.50...38.50
1000S.: (35.30...39.70)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...43.00
1000S.: (40.30...44.70)

15th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.00...37.00
1000S.: (32.50...38.50)

20th speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.50...41.50
1000S.: (33.00...44.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

Damper set qty.:

2nd speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...13.00
1000S.: (8.00...16.00)

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (6.00...14.00)

High Idle:

1st speed 1/mi: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (6.00...14.00)

Residual:

1. Rotacao 1/min: 575
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.50...6.50
1000S.: (4.00...8.00)
2nd speed 1/min: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.30...9.30
1000S.: (5.80...10.80)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/ : +0.0...3.00 #
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 1.10...1.50 #
difference mm: (0.90...1.70)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 1.80...2.20 #
difference bar: (1.50...2.50)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

1st speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...29.00
1000S.: (25.00...31.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...75.00
1000S.: -

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...50.00
1000S.: -

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...65.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.1...5.5
MS mm: 1.1...1.5

Remarks:

:
:
On initial measurement, screw in
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 14.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R432-4
Type number : 0 460 494 285
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 028.D (1.9L.) B3

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.70...4.10
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.50...6.10
Shutoff
electromagnet Volt: 12

K04

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 42.00...43.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575
Del. quantity cm3/
1000S.: 5.50...6.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2600
Del. quantity cm3/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...65.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: 4.00...10.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 0.60...0.80
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 6.60...7.40
mm: (6.30...7.70)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 TD travel mm: 3.70...4.10
 mm: (3.20...4.60)

 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 750
 TD travel mm: 1.60...2.40
 mm: (1.30...2.70)

 Shutoff
 electromagnet Volt: 12

 Supply-pump pressure characteristic:

 1st speed 1/min: 750
 Supply-pump pressure bar: 4.30...4.90
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1250
 Supply-pump pressure bar: 5.50...6.10
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 2200
 Supply-pump pressure bar: 7.70...8.30
 Shutoff
 electromagnet Volt: 12

 Overflow quantity at overflow valve:

 1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (27.80...97.30)
 2nd speed 1/min: 2200
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...138.90
 quantity cm³/10s: (41.70...152.90)

 Delivery-quant. and breakaway char.:

 2nd speed 1/min: 2750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...6.00
 1000S.: (0.00...6.00)
 5th speed 1/min: 2600
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...14.00
 1000S.: (8.00...16.00)
 8th speed 1/min: 2500
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 21.50...31.50
 1000S.: (20.50...32.50)
 9th speed 1/min: 2200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 36.70...38.70
 1000S.: (35.50...39.90)
 12th speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 42.00...43.00
 1000S.: (40.30...44.70)
 15th speed 1/min: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 33.70...36.70
 1000S.: (32.20...38.20)
 20th speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 35.50...41.50
 1000S.: (33.00...44.00)

 Mech. shutoff:

 Electr. shutoff:

 1st speed 1/min: 450
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: --

 Idle delivery:

 Damper set qty.:

 2nd speed 1/min: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 11.00...13.00
 1000S.: (8.00...16.00)

 LFG-setting:
 solidale con carcassa:
 Idle delivery:

 1st speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 9.00...11.00
 1000S.: (6.00...14.00)

 High Idle:

 1st speed 1/mi: 500
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 9.00...11.00
1000S.: (6.00...14.00)

Residual:

1. Rotacao 1/min: 575
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.50...6.50
1000S.: (4.00...8.00)
2nd speed 1/min: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.30...9.30
1000S.: (5.80...10.80)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/: 4.00...10.00#
difference 1000S.: (3.00...11.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Inj.-qty. cm³/: +0.00...3.00*
difference 1000S.: +(0.00...3.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.60...0.80 #
difference mm: (0.60...0.80)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD-travel : 1.80...2.20 *
difference mm: (1.50...2.50)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 1.10...1.50 *
difference bar: (0.90...1.70)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

1st speed 1/min: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...29.00
1000S.: (25.00...31.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...75.00
1000S.: (35.00...75.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...50.00
1000S.: (30.00...50.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...65.00
1000S.: (35.00...65.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.1...5.5
MS mm: 1.1...1.5
SVS max. mm: 2.9

On initial measurement, screw in
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 15.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2050R442
Type number : 0 460 494 292
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8144.97.2400

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 683 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2.00...2.40
Shutoff
electromagnet Volt: 12

K07

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 4.70...5.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 63.50...64.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 40.00...41.00

Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 1.00...5.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 31.00...37.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...74.00
mind 1000S.: 50.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 1000
Inj.-qty. cm3/
difference 1000S.: 19.00...25.00

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000
Charge press hPa: 1000
TD-travel
difference mm: 0.70...0.90
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
Charge press hPa: 1000
TD travel mm: 8.00...8.80
mm: (7.70...9.10)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.00...2.40
mm: (1.70...2.70)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2050
Charge press. hPa: 1000
TD travel mm: 9.60...10.40
mm: (9.30...10.70)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1400
Charge press. hPa: 1000
TD travel mm: 4.80...5.60
mm: (4.50...5.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.50...4.10

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.70...5.30

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2050
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.40...9.00

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2050
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 4.5
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 54.50...55.50
1000S.: (52.50...57.50)

2nd speed 1/min: 2750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 2400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31.00...37.00
1000S.: (30.00...38.00)

9th speed 1/min: 2050
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 62.00...65.00
1000S.: (61.30...65.70)

12th speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 63.50...64.50
1000S.: (62.00...66.00)

18th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...41.00
1000S.: (38.00...43.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 10.00...14.00
1000S.: (9.00...15.00)

High Idle:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 12.00...16.00
1000S.: (11.00...17.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 1.00...5.00
1000S.: (0.00...6.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm3/: 19.00...25.00
difference 1000S.: *
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm3/: 19.00...21.00
difference 1000S.: #
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm3/: +2.00...8.00
difference 1000S.: '
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):

K09

1st speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : 0.70...0.90 *
difference mm: (0.70...0.90)
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : 1.10...1.90 '
difference mm: (1.10...1.90)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1000
Charge press. hPa: 1000
Supply pump-
pressure : 0.10...0.30 #
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 20.00...22.00
1000S.: (18.50...23.50)

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 50.00...74.00
1000S.: (50.00...74.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 36.00...44.00
1000S.: (36.00...44.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 50.00...74.00
1000S.: (50.00...74.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.6...6.0
MS	mm: 1.1...1.5
LDA stroke	mm: 4.5

Remarks:

* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Add 12 mm spacer at 3rd part-load-quantity stop.

EOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 13.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2350R452
Type number : 0 460 494 299
Customer Part-No. :

Customer-specific information
Customer : RNJR

Engine : J8S - 784

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125
Setting value mm: 2.60...3.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1125

K11

Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1125
Del. quantity cm3/
1000S.: 35.20...36.20

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 2.00...6.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
1000S.: 20.00...26.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 52.00...92.00
mind 1000S.: 52.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1125
Inj.-qty. cm3/
difference 1000S.: 11.00...15.00 #

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1125

TD-travel
difference mm: 0.50...0.70 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000

TD travel mm: 7.10...7.90
mm: (6.80...8.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD travel mm: 2.60...3.00
mm: (2.10...3.50)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1125
Supply-pump
pressure bar: 4.20...4.80

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.50...7.10
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...10.50
1000S.: (1.50...11.50)
5th speed 1/min: 2500

K12

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...26.00
1000S.: (19.00...27.00)

9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.50...36.50
1000S.: (33.20...37.80)

10th speed 1/min: 1750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.10...36.10
1000S.: (32.80...37.40)

12th speed 1/min: 1125
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.20...36.20
1000S.: (33.40...38.00)

20th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.90...35.90
1000S.: (32.10...36.70)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...10.00
1000S.: (4.00...12.00)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.50...12.50
1000S.: (6.50...14.50)

Residual:

1. Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 2.00...6.00
1000S.: (2.00...6.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1125
Inj.-qty. cm³/: 10.0...12.0 *
difference 1000S.: (10.00...12.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
Inj.-qty. cm³/: 11.0...15.0 #
difference 1000S.: (11.00...15.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1125
Inj.-qty. cm³/: 2.00...8.00 '
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1125
TD-travel : 0.50...0.70 #
difference mm: (0.50...0.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD-travel : 1.10...1.50 '
difference mm: (1.00...1.60)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1125
Supply pump-
pressure : 0.10...0.30 *
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 23.50...24.50
1000S.: (21.50...26.50)

Automatic starting fuel delivery:

1st speed 1/min: 210

K13

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...85.00
1000S.: (45.00...85.00)

2nd speed 1/min: 310
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 52.00...92.00
1000S.: (52.00...92.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 1.3...1.7
SVS max. mm: 3.0

Remarks:

:
:
For adjustment of switching point
(EGR valve), include 12.0 mm spacer
at third fuel-delivery stop.

On initial measurement, screw in
residual-quantity adjusting screw 1 mm.

Screw out residual-quantity adjusting
screw 1 mm after setting pump.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 13.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2350R452-1
Type number : 0 460 494 300
Customer Part-No. :

Customer-specific information
Customer : RNJR

Engine : J8S - 784 CA

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125
Setting value mm: 2.60...3.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1125

K14

Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1125
Del. quantity cm3/
1000S.: 35.20...36.20

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 2.00...6.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
1000S.: 20.00...26.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 52.00...92.00
mind 1000S.: 52.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1125
Inj.-qty. cm3/
difference 1000S.: 11.00...15.00 #
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1125
TD-travel
difference mm: 0.50...0.70 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000

TD travel mm: 7.10...7.90
mm: (6.80...8.20)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1125

TD travel mm: 2.60...3.00
mm: (2.10...3.50)

Shutoff
electromagnet Volt: 12

4th speed 1/min: 800

TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800

Supply-pump pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1125

Supply-pump pressure bar: 4.20...4.80

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 2000

Supply-pump pressure bar: 6.50...7.10

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800

Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)

2nd speed 1/min: 2250

Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: 55.60...139.00
(40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 2650

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 2.50...10.50
1000S.: (1.50...11.50)

5th speed 1/min: 2500

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 20.00...26.00
1000S.: (19.00...27.00)

9th speed 1/min: 2250

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 34.50...36.50
1000S.: (33.20...37.80)

10th speed 1/min: 1750

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 34.10...36.10
1000S.: (32.80...37.40)

12th speed 1/min: 1125

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 35.20...36.20
1000S.: (33.40...38.00)

20th speed 1/min: 800

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 32.90...35.90
1000S.: (32.10...36.70)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400

Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 400

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 6.00...10.00
1000S.: (4.00...12.00)

High Idle:

1st speed 1/mi: 500

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 8.50...12.50
1000S.: (6.50...14.50)

Residual:

1.Rotacao 1/min: 500

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 2.00...6.00
1000S.: (2.00...6.00)

load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1125
Inj.-qty. cm³/: 10.0...12.0 *
difference 1000S.: (10.00...12.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
Inj.-qty. cm³/: 11.0...15.0 #
difference 1000S.: (11.00...15.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1125
Inj.-qty. cm³/: 2.00...8.00 '
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1125
TD-travel : 0.50...0.70 #
difference mm: (0.50...0.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD-travel : 1.10...1.50 '
difference mm: (1.00...1.60)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1125
Supply pump-
pressure : 0.10...0.30 *
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 23.50...24.50
1000S.: (21.50...26.50)

Automatic starting fuel delivery:

1st speed 1/min: 210

K16

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...85.00
1000S.: (45.00...85.00)

2nd speed 1/min: 310
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 52.00...92.00
1000S.: (52.00...92.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 1.3...1.7
SVS max. mm: 3.0

Remarks:

For adjustment of switching point
(EGR valve), include 12.0 mm spacer
at third fuel-delivery stop.

On initial measurement, screw in
residual-quantity adjusting screw 1 mm.

Screw out residual-quantity adjusting
screw 1 mm after setting pump.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV
Edition : 13.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2100R471
Type number : 0 460 494 308
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 1,9 l UD

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery block
Piston stroke mm: -
mm: -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.70...4.10
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 42.00...43.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 5.50...6.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2400
Del. quantity cm3/
1000S.: 12.00...16.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...90.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: 7.00...13.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 0.90...1.10
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1700
TD travel mm: 5.60...6.40
mm: (5.20...6.80)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.70...4.10
mm: (3.10...4.70)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
TD travel mm: 1.10...1.90
mm: (0.70...2.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump
pressure bar: 3.80...4.40
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 5.30...5.90
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1700
Supply-pump
pressure bar: 6.60...7.20
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (27.80...97.30)
2nd speed 1/min: 1850
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm3/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 2400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 12.00...16.00
1000S.: (10.00...18.00)

8th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 25.00...35.00
1000S.: (24.00...36.00)

9th speed 1/min: 1850
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 40.00...42.00
1000S.: (38.80...43.20)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 42.00...43.00
1000S.: (40.30...44.70)

20th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 33.50...36.50
1000S.: (32.00...38.00)

21th speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 31.50...37.50
1000S.: (29.00...40.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 7.00...9.00
1000S.: (4.00...12.00)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 7.00...9.00
1000S.: (4.00...12.00)

Residual:

1.Rotacao 1/min: 550

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.50...6.50
1000S.: (4.00...8.00)

2nd speed 1/min: 515
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.50...7.50
1000S.: (4.00...9.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/: 7.00...13.00'
difference 1000S.: (6.00...14.00)
3rd speed 1/min: 1250
Inj.-qty. cm³/: 6.00...8.00 #
difference 1000S.: (6.00...8.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
Inj.-qty. cm³/: +0.00...3.00*
difference 1000S.: +(0.00...3.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.90...1.10 #
difference mm: (0.90...1.10)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD-travel : 1.30...1.70 *
difference mm: (0.90...2.10)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.70...1.10 *
difference bar: (0.50...1.30)
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply pump-
pressure : 0.10...0.30 #
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

Spacing mm: 12.0

1st speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...29.00
1000S.: (25.00...31.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...90.00
1000S.: (40.00...90.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...90.00
1000S.: (40.00...90.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.1...5.5
MS mm: 1.2...1.4

Remarks:

:
For adjustment of switching point
(EGR valve), include 12.0 mm spacer
at third fuel-delivery stop.

On initial measurement, screw in
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEJ
Edition : 15.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2150R474-1
Type number : O 460 494 313
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD11ATE-L/BVA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 0.3
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 2.30...2.70
Shutoff
electromagnet Volt: 12

K20

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 5.00...5.60
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 61.00...62.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 42.00...43.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 2.50...3.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2250
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 49.00...55.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...80.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 1000
TD travel mm: 5.50...6.30
mm: (5.20...6.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.30...2.70
mm: (2.00...3.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 4.30...4.90
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump pressure bar: 5.00...5.60
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 1000
Supply-pump pressure bar: 7.10...7.70
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2000
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750*

Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 7.1

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 56.00...57.00
1000S.: (53.50...59.50)

2nd speed 1/min: 2700
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 5.00...11.00
1000S.: (4.00...12.00)

3rd speed 1/min: 2400
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 33.50...40.50
1000S.: (33.00...41.00)

5th speed 1/min: 2250
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 49.00...55.00
1000S.: (48.00...56.00)

9th speed 1/min: 2000
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 55.00...58.00
1000S.: (54.20...58.80)

10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 60.50...63.50
1000S.: (59.50...64.50)

12th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 61.00...62.00
1000S.: (59.20...63.80)

13th speed 1/min: 500
Charge press. hPa: -
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 42.00...43.00
1000S.: (40.20...44.80)

20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 60.00...63.00
1000S.: (59.00...64.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 2000

Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 325
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 325
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...14.00
1000S.: (10.00...16.00)

2nd speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.00...11.00
1000S.: (5.00...11.00)

High Idle:

1st speed 1/mi: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...13.00
1000S.: (9.00...15.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...3.50
1000S.: (0.50...5.50)

Part-load del. at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...26.00
1000S.: (22.50...28.50)

Automatic starting fuel delivery:

2nd speed 1/min: 325
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.00...44.00
1000S.: (36.50...44.50)

3rd speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 76.00...78.00
1000S.: (74.50...79.50)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...80.00
1000S.: (68.00...82.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.2...5.6
MS mm: 0.9...1.3
LDA stroke mm: 7.1

Remarks:

Add 12 mm spacer at 3rd
part-load-quantity stop.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 13.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2200R416-1
Type number : 0 460 494 315
Customer Part-No. :

Customer-specific information
Customer : RNJR

Engine : J8S - 890

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 043

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.2
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 0.3
mm: $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 800

K23

Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 800
Setting value bar: 5.10...5.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
Charge press. hPa: 800
Del. quantity cm³/
1000S.: 47.20...48.20
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 37.00...38.00
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm³/
1000S.: 7.00...11.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.5
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 800
Del. quantity cm³/
1000S.: 23.00...29.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...100.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 800
TD travel mm: 6.20...7.00
mm: (6.20...7.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1400
Charge press hPa: 800
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 800
TD travel mm: 1.90...2.70
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1800
Charge press. hPa: 800
TD travel mm: 5.70...6.50
mm: (5.40...6.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: -
Supply-pump pressure bar: 2.60...3.20
bar: (2.30...3.50)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1400
Charge press. hPa: 800
Supply-pump pressure bar: 5.10...5.70
bar: (4.80...6.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 800
Supply-pump pressure bar: 6.90...7.50
bar: (6.60...7.80)

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)

2nd speed 1/min: 2000
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting point hPa: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 41.00...42.00
1000s.: (38.50...44.50)

2nd speed 1/min: 2700
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000s.: (0.00...3.00)

3rd speed 1/min: 2500
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.50...17.50
1000s.: (2.50...17.50)

5th speed 1/min: 2400
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 23.00...29.00
1000s.: (22.00...30.00)

9th speed 1/min: 2000
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 44.10...45.10
1000s.: (42.80...47.40)

12th speed 1/min: 1400
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quynity cm3/: 47.20...48.20
1000s.: (45.40...50.00)

18th speed 1/min: 600
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...38.00
1000s.: (34.50...40.50)

20th speed 1/min: 1000
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.60...48.60
1000s.: (44.10...50.10)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...11.00
1000S.: (5.00...13.00)
Dispersion cm³/: 2.5
1000S.: (3.0)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.00...7.00
1000S.: (1.00...9.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...100.00
1000S.: (40.00...100.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...100.00
1000S.: (60.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4

K25

KF mm: 5.6...6.0
MS mm: 1.3...1.7
SVS max. mm: 4.8

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
Edition : 13.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2200L243-6
Type number : 0 460 494 316
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 2,3 YD

Power KW: 54

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery block
Piston stroke mm: -
mm: -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Setting value mm: 4.30...4.70
AFB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1200
Setting value bar: 4.00...4.60
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1200
Del. quantity cm³/
1000S.: 43.00...44.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

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Low-idle speed regulation

Speed 1/min: 290
Del. quantity cm³/
1000S.: 10.00...14.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm³/
1000S.: 21.00...27.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 47.00...73.00
mind 1000S.: 47.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1200

Inj.-qty. cm3/
 difference 1000S.: 4.50...12.50
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1200
 TD-travel
 difference mm: 0.50...0.70
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2200
 TD travel mm: 8.80...9.60
 mm: (8.50...9.90)

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1200
 TD travel mm: 4.30...4.70
 mm: (3.80...5.20)

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 800
 TD travel mm: 2.10...2.90
 mm: (1.80...3.20)

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 600
 TD travel mm: 0.90...1.70
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 9th speed 1/min: 300A
 TD travel mm: 2.70...4.30
 mm: (2.50...4.50)

KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 10th speed 1/min: 800B
 TD travel mm: 3.10...5.50
 mm: (3.10...5.50)

KSB/AFB
 valve Volt: -

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2200
 Supply-pump
 pressure bar: 6.50...7.10

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1200
 Supply-pump
 pressure bar: 4.00...4.60

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 800
 Supply-pump
 pressure bar: 3.00...3.60

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 600
 Supply-pump
 pressure bar: 2.40...3.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm3/10s: (26.70...98.40)

2nd speed 1/min: 2200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2700
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 2600
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 2.00...10.00
 1000S.: (1.00...11.00)
 5th speed 1/min: 2450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 21.00...27.00
 1000S.: (20.00...28.00)
 9th speed 1/min: 2200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 35.50...38.50
 1000S.: (34.70...39.30)
 12th speed 1/min: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 43.00...44.00
 1000S.: (41.20...45.80)
 20th speed 1/min: 600
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 36.00...39.00
 1000S.: (34.50...40.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 290
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -
 KSB/AFB
 valve Volt: -

Idle delivery:

1st speed 1/min: 290
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...14.00
 1000S.: (8.00...16.00)

Dispersion cm³/: 3.0
 1000S.: (3.0)
 2nd speed 1/min: 400
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...2.60
 1000S.: (0.00...2.60)
 3rd speed 1/min: 320
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 5.00...11.00
 1000S.: (4.50...11.50)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1200
 Inj.-qty. cm³/: 6.00...8.00
 difference 1000S.: (6.00...8.00)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1200
 TD-travel : 0.50...0.70
 difference mm: (0.50...0.70)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 130
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 47.00...73.00
 1000S.: (47.00...73.00)

2nd speed 1/min: 270
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 25.00...35.00
 1000S.: (25.00...35.00)

4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 47.00...73.00
1000S.: (47.00...73.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.6...6.0
MS mm: 0.8...1.2
A = KSB adjustment point
B = KSB curve point
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 13.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2050R476
Type number : 0 460 494 317
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8144.97. 500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 1000
Setting value mm: 5.80...6.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 1000
Setting value bar: 6.10...6.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 64.50...65.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 40.00...41.00

Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 1.00...5.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 31.00...37.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...74.00
mind 1000S.: 50.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 1000
Inj.-qty. cm3/
difference 1000S.: 20.50...26.50

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000
Charge press hPa: 1000
TD-travel
difference mm: 1.10...1.30
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
Charge press hPa: 1000
TD travel mm: 8.20...9.00
mm: (7.70...9.10)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1400
Charge press hPa: 1000
TD travel mm: 5.80...6.20
mm: (4.80...5.80)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2050
Charge press. hPa: 1000
TD travel mm: 9.60...10.40
mm: (9.30...10.70)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 2.60...3.40
mm: (1.90...3.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.50...4.10

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1400
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.10...6.70

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2050
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.40...9.00

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2050
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600*
Charge-air pressure-setting
point hPa: 250
LDA-stroke mm: 4.5

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...51.00
1000S.: (48.00...53.00)

2nd speed 1/min: 2750
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 2600
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 2.00...10.20
1000S.: (2.00...10.90)

5th speed 1/min: 2400
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 31.00...37.00
1000S.: (30.00...38.00)

9th speed 1/min: 2050
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 64.00...67.00
1000S.: (63.30...67.70)

10th speed 1/min: 1950
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 64.00...67.00
1000S.: (64.50...67.50)

12th speed 1/min: 1200

Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 64.50...65.50
1000S.: (63.00...67.00)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...41.00
1000S.: (38.00...43.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...13.00
1000S.: (8.00...14.00)

2nd speed 1/min: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.00...11.00
1000S.: (5.00...11.00)

High Idle:

1st speed 1/mi: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.00...9.00
1000S.: (4.00...10.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 1.00...5.00
1000S.: (0.00...6.00)
2nd speed 1/min: 650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00

Load-dependent start of delivery:

LD4

Inj.-qty.dif.measurement:

1st speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm³/: 20.50...26.50
difference 1000S.: (19.50...27.50)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : 1.10...1.30
difference mm: (1.10...1.30)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.50...27.50
1000S.: (24.00...29.00)

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...74.00
1000S.: (50.00...74.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.00...44.00
1000S.: (36.00...44.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...74.00
1000S.: (50.00...74.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.6...6.0
MS	mm: 1.1...1.5
LDA stroke	mm: 4.5

Remarks:

* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
Edition : 10.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/8F2600R284-1
Type number : 9 460 620 005
Customer Part-No. : 897 040 8410

Customer-specific information
Customer : ISUZU

Engine : 4EC1-NA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 40.00...46.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.70...3.10
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250

L06

Setting value bar: 3.40...4.00
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del. quantity cm3/
1000S.: 28.70...29.70

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 9.10...13.10

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.5
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2850
Del. quantity cm3/
1000S.: 13.90...19.90

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 25.00...65.00
mind 1000S.: 25.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: 5.50...8.50
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 0.20...1.30
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2300

TD travel mm: 7.00...7.80
 mm: (6.70...8.10)
 electromagnet Volt: 12
 2nd speed 1/min: 1250
 TD travel mm: 2.70...3.10
 mm: (2.20...3.60)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 620
 TD travel mm: 0.10...0.90
 mm: (0.00...1.20)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 2000
 TD travel mm: 5.70...6.50
 mm: (5.40...6.80)
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1500
 TD travel mm: 3.70...4.30
 mm: (3.30...4.70)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2300
 Supply-pump pressure bar: 6.00...6.60
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1250
 Supply-pump pressure bar: 3.40...4.00
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 500
 Supply-pump pressure bar: 1.60...2.20
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 2000
 Supply-pump pressure bar: 5.20...5.80
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1500
 Supply-pump pressure bar: 3.90...4.50
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 83.00...127.00
 (68.00...142.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 28.70...29.70
 1000S.: (26.90...31.50)
 3rd speed 1/min: 2975
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...9.00
 1000S.: (0.00...9.00)
 5th speed 1/min: 2850
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 13.90...19.90
 1000S.: (12.90...20.90)
 8th speed 1/min: 1200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 29.20...32.20
 1000S.: (28.70...32.70)
 9th speed 1/min: 2000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 28.70...31.70
 1000S.: (28.00...32.40)
 11th speed 1/min: 2400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 28.30...31.30
 1000S.: (27.50...32.10)
 12th speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 28.90...31.90
 1000S.: (27.40...33.40)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 9.10...13.10
 1000S.: (7.10...15.10)
 Dispersion cm³/: 2.5
 1000S.: (3.0)
 2nd speed 1/min: 650

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...5.00
1000S.: (0.00...5.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm3/ : 5.50...8.50
difference 1000S.: (5.50...8.50)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.20...1.20
difference mm: (0.20...1.20)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 24.00...36.00
1000S.: (24.00...36.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 25.00...65.00
1000S.: (25.00...65.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.6...6.0
MS mm: 1.2...1.6

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
Edition : 09.04.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/10F2200R365-1
Type number : 9 460 620 007
Customer Part-No. : 897 040 8430

Customer-specific information
Customer : ISUZU

Engine : 4EE1-TC

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating oil
return temp. °C
with thermometer : 40.00...46.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 3.90...4.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 51.30...52.30

Shutoff
electromagnet Volt: 12
1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
1000S.: 36.80...40.80

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 415
Del. quantity cm3/
1000S.: 8.20...12.20

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.5
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2600
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 19.20...25.20

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 38.70...48.70
mind 1000S.: 38.70

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 1000
Inj.-qty. cm3/
difference 1000S.: 26.50...29.50
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
Charge press hPa: 1000
TD-travel
difference mm: 1.70...2.30
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250
Charge press hPa: 1000
TD travel mm: 7.20...8.00
mm: (6.90...8.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 3.10...3.50
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
Charge press hPa: 1000
TD travel mm: 0.30...1.10
mm: (0.00...1.40)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2000
Charge press. hPa: 1000
TD travel mm: 6.10...6.90
mm: (5.80...7.20)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2250
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.50...7.10

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.90...4.50

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure bar: 2.10...2.70

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 83.00...127.00
quantity cm³/10s: (68.00...142.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 1000
Charge-air pressure-setting
point hPa: 340
LDA-stroke mm: 4.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 44.20...45.20
1000s.: (42.20...47.20)

3rd speed 1/min: 2850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000s.: (0.00...5.00)

5th speed 1/min: 2600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 19.20...25.20
1000s.: (17.70...26.70)

8th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 49.00...52.00
1000s.: (48.20...52.80)

9th speed 1/min: 1500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.50...37.50
1000s.: (33.70...38.30)

11th speed 1/min: 2200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 49.60...52.60
1000s.: (48.80...53.40)

12th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 51.30...52.30
1000s.: (49.50...54.10)

13th speed 1/min: 550
Charge press. hPa: -
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 36.80...40.80
1000S.: (35.80...41.80)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 415
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 415
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.20...12.20
1000S.: (6.20...14.20)

Dispersion cm³/: 2.5
1000S.: (3.0)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Charge press. hPa: 1000
Inj.-qty. cm³/: 26.50...29.50
difference 1000S.: (26.50...29.50)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
Charge press. hPa: 1000
TD-travel : 1.70...2.30
difference mm: (1.70...2.30)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

2nd speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.00...49.00
1000S.: (29.00...49.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 28.70...48.70
1000S.: (28.70...48.70)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.6...6.0
MS mm: 0.7...1.1
LDA stroke mm: 4.0

Remarks:

* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No.
..303

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 646 266AB
 Injection pump
 Pump designation : PE6A95D410LS2587
 EP type number : 0 410 696 983
 Governor
 Governor design. : RGV300...1150AB1088L
 Governor no. : 0 420 212 115

Customer-spec. information
 Customer : KHD

Engine : F6L413 FW

1st version kW : 96.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
 : (1.45...1.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.30...8.40

Del.quantity cm3/ : 7.4...7.6

100 s: (7.2...7.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.1...1.7

100 s: (0.8...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.60

2nd speed rpm : 390

travel mm : 2.20...2.60

3rd speed rpm : 1195

travel mm : 8.70...9.10

4th speed rpm : 1245

travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 74.0...76.0

1000 : (72.0...78.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: ?

Testing:
1st rack travel in: 7.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1232...1262
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: ?

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 300...420

TORQUE CONTROL
Dimension a mm : 0.90
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.30...8.40
2nd speed rpm : 800
Rack travel in m: 9.20...9.40
3rd speed rpm : 1000
Rack travel in m: 8.70...9.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm³/ : 77.0...80.0
1000 s: (74.5...82.5)
Speed rpm : 100
Del.quantity cm³/ : 66.0...69.0 *
1000 s: (63.5...71.5)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

* Set warm-start quantity at
excess-fuel stop for starting
on governor housing
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Below-ground operation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 646 266AC
Injection pump
Pump designation : PE6A95D410LS2587
EP type number : 0 410 696 983
Governor
Governor design. : RQV300...1150AB1088L
Governor no. : 0 420 212 115

Customer-spec. information
Customer : KHD

Engine : F6L413 FW

1st version kW : 75.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
: (1.45...1.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 7.40...7.50

Del.quantity cm3/ : 6.2...6.4

100 s: (6.0...6.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.1...1.7

100 s: (0.8...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.60

2nd speed rpm : 390

travel mm : 2.20...2.60

3rd speed rpm : 1195

travel mm : 8.70...9.10

4th speed rpm : 1245

travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 62.0...64.0

1000 : (60.0...66.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: ?

Testing:
1st rack travel in: 6.40
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: ?

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 300...420

TORQUE CONTROL
Dimension a mm : 0.90
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 7.40...7.50
2nd speed rpm : 800
Rack travel in m: 8.30...8.50
3rd speed rpm : 1000
Rack travel in m: 7.60...7.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm3/ : 65.0...68.0
1000 s: (62.5...70.5)
Speed rpm : 100
Del.quantity cm3/ : 66.0...69.0 *
1000 s: (63.5...71.5)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 6.40
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

* Set warm-start quantity at
excess-fuel stop for starting
on governor housing
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Below-ground operation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 648 148

Injection pump
Pump designation : PE8A95D410LS2608
EP type number : 0 410 698 988
Governor
Governor design. : RQV450...1150AB1268L
Governor no. : 0 420 212 243

Customer-spec. information
Customer : KHD

Engine : F8L413F

1st version kW : 165.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 1.1...1.7

100 s: (0.8...1.9)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

travel mm : 0.30...0.60

2nd speed rpm : 750

travel mm : 3.50...3.80

3rd speed rpm : 1050

travel mm : 6.70...6.90

4th speed rpm : 1200

travel mm : 8.90...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Del. quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 60...63

Testing:

1st rack travel in: 8.50
Speed rpm : 1170...1180
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 6...14
Speed rpm : 450
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 530...690

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 10.50...10.60
2nd speed rpm : 1130
Rack travel in m: 9.50...9.70
3rd speed rpm : 1050
Rack travel in m: 9.80...10.10

START CUT-OUT

Speed 1/min : 370 (390)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1130
Del.quantity cm³/ : 86.5...89.5
1000 s: (84.0...92.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.50
Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 j 1
 Edition : 03.04.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 400 844 096
 Injection pump
 Pump designation : PES4A95D410RS2809
 EP type number : 0 410 894 993
 Governor
 Governor design. : RQV300...1400AB1065-23L
 Governor no. : 0 420 212 227

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 65.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm³/ : 6.4...6.6

100 s: (6.2...6.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm³/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 64.5...66.5

1000 : (62.5...68.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 8.90
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 73...81

Testing:
Speed rpm : 100
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION
Speed rpm : 550...700

TORQUE CONTROL
Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.90...10.00
2nd speed rpm : 400
Rack travel in m: 11.10...11.20
3rd speed rpm : 630
Rack travel in m: 10.90...11.20
4th speed rpm : 925
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 400
Del.quantity cm3/ : 49.0...53.0
1000 s: (46.5...55.5)
Speed rpm : 630
Del.quantity cm3/ : 49.0...53.0
1000 s: (46.5...55.5)
Speed rpm : 925
Del.quantity cm3/ : 59.0...63.0
1000 s: (56.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.40...14.80

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.01.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 844 098
Injection pump
Pump designation : PES4A95D410RS2809
EP type number : 0 410 894 993
Governor
Governor design. : RQV300...1400AB1065-28L
Governor no. : 0 420 212 242

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 65.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-10-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm³/ : 6.5...6.6

100 s: (6.3...6.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del.quantity cm³/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 65.0...66.0

1000 : (63.0...68.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:

1st rack travel in: 8.90
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 73...81

Testing:

Speed rpm : 100
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.40...8.60

CONSTANT REGULATION

Speed rpm : 550...700

TORQUE CONTROL

Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.90...10.00
2nd speed rpm : 400
Rack travel in m: 10.70...10.90
3rd speed rpm : 670
Rack travel in m: 10.50...10.70
4th speed rpm : 1060
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 400
Del.quantity cm3/ : 48.0...51.0
1000 s: (45.5...53.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.80...15.20

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j 4
 Edition : 03.04.92
 Replaces : 03.91
 Test oil : ISO-4113
 Combination no. : 0 400 846 591
 Injection pump
 Pump designation : PES6A95D410RS2797
 EP type number : 0 410 896 900
 Governor
 Governor design. : RGV300...1400AB1065-22L
 Governor no. : 0 420 212 226

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 97.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.10...10.20

Del.quantity cm³/ : 6.1...6.3

100 s: (5.9...6.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.9...9.1

Del.quantity cm³/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30

2nd speed rpm : 500
 travel mm : 2.30...2.80

3rd speed rpm : 750
 travel mm : 4.10...4.30

4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 61.0...63.0

1000 : (59.0...65.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 9.10
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80

Testing:
Speed rpm : 100
Minimum rack travel: 10.50
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 500...650

TORQUE CONTROL
Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.10...10.20
2nd speed rpm : 400
Rack travel in m: 11.30...11.60
3rd speed rpm : 630
Rack travel in m: 10.90...11.20
4th speed rpm : 925
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 400
Del.quantity cm3/ : 49.0...52.0
1000 s: (46.5...54.5)
Speed rpm : 630
Del.quantity cm3/ : 49.0...53.0
1000 s: (46.5...55.5)
Speed rpm : 925
Del.quantity cm3/ : 57.0...61.0
1000 s: (54.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.60...15.00

Remarks:

:
Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 y 2
 Edition : 13.03.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 400 846 604
 Injection pump
 Pump designation : PES6A95D32ORS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RQV350...1350AB1248-2R
 Governor no. : 0 420 213 126

Customer-spec. information
 Customer : NAVISTAR

Engine : DT 360

1st version kW : 127.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 110

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 7.9...8.1

100 s: (7.7...8.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.30...7.50

2nd speed rpm : 1460

travel mm : 8.10...8.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h: 900

Del.quantity : 79.5...81.5

1000 : (77.5...83.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 10.90
Speed rpm : 1390...1420
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.90...12.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 110
Rack travel in m: 10.40...10.50
3rd pressure hPa : 300
Rack travel in m: 11.50...11.90

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 71.0...75.0
1000 s: (69.0...77.0)

BREAKAWAY

L25

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks: : NAVISTAR #1819273C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 30.04.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 400 846 606

Injection pump
Pump designation : PES6A95D32ORS2779
EP type number : 0 410 896 903
Governor
Governor design. : RQV350...1200AB1236-
8R
Governor no. : 0 420 213 127

Customer-spec. information
Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6 00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75
: (2.60...2.80)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200
Rack travel in mm : 13.10...13.20
Del.quantity cm3/ : 9.7...9.9
100 s: (9.5...10.1)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.7...2.1
100 s: (1.5...2.3)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
travel mm : 8.60...9.00
2nd speed rpm : 1250
travel mm : 7.30...7.50
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 900
Del.quantity : 97.0...99.0
1000 : (95.0...101.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 12.10
Speed rpm : 1240...1270
2nd rack travel in: 4.00
Speed rpm : 1385...1395
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19
Setting point w/out bumper spring
Speed rpm : 350

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.10...13.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 225
Rack travel in m: 10.90...11.00
3rd pressure hPa : 460
Rack travel in m: 12.30...12.70

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.5...78.5
1000 s: (72.5...80.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1240...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 17.0...21.0
1000 s: (15.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1819325C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 846 609

Injection pump
Pump designation : PES6A95D32ORS2779
EP type number : 0 410 896 903
Governor
Governor design. : RQV350...1350AB1248-3R
Governor no. : 0 420 213 128

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-360

1st version kW : 127.0
Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 7.3...7.5

100 s: (7.1...7.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.30...7.50

2nd speed rpm : 1460

travel mm : 8.10...8.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h: 900

Del.quantity : 73.5...75.5

1000 : (71.5...77.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 43...51

Testing:
1st rack travel in: 10.60
Speed rpm : 1410...1430
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.60...11.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 200
Rack travel in m: 10.10...10.20
3rd pressure hPa : 380
Rack travel in m: 10.90...11.30

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.0...65.0
1000 s: (59.0...67.0)

BREAKAWAY

MO1

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1410...1430

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks: : NAVISTER #1819884C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 L 1
Edition : 02.05.89
Replaces : 20.12.88
Test oil : ISO-4113

Combination no. : 0 400 866 129

Injection pump
Pump designation : PES6A100D320/3RS2763
EP type number : 0 410 806 006
Governor
Governor design. : RSV400...1050AOC2190
-27R
Governor no. : 0 420 233 225

Customer-spec. information
Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 111.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

M02

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.70...9.80

Del.quantity cm³/ : 8.5...8.7

100 s : (8.3...8.9)

Spread cm³ : 0.4

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 1.1...1.5
100 s : (0.9...1.8)

Spread cm³ : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 8.70
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1205...1235
3rd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 30...38
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.70...9.80
2nd speed rpm : 750
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 94.0...98.0
1000 s: (92.0...100.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.30...5.50

M03

Del.quantity cm3/ : 11.5...15.5
1000 s: (9.0...18.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: C.D.C. # 3912534

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 03.04.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 874 252
Injection pump
Pump designation : PES4A95D410RS2809-1
EP type number : 0 410 894 992
Governor
Governor design. : RSV350...1400AOC2006
-7L
Governor no. : 0 420 232 575

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM364

1st version kW : 65.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)

MD4

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1380

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 6.4...6.6

100 s: (6.2...6.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.4

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1380

Del.quantity : 64.5...66.5

1000 : (62.5...68.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 109...117

Testing:

1st rack travel in: 9.40

Speed rpm : 1433...1438

2nd rack travel in: 4.00

Speed rpm : 1491...1508

4th rack travel in: 1575

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 8.2

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 8.00...8.40
Rack travel in mm : 2.00
Speed rpm : 490...550

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1380
Rack travel in m: 10.40...10.50
2nd speed rpm : 400
Rack travel in m: 11.70...11.80
3rd speed rpm : 900
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 400
Del.quantity cm3/ : 48.0...51.0
1000 s: (45.5...53.5)
Spread cm3 : -
1000 s: (5.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 16.30...16.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.00...8.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h11
 Edition : 07.04.89
 Replaces : 15.6.88
 Test oil : ISO-4113
 Combination no. : 0 400 876 347
 Injection pump
 Pump designation : PES6A100D410RS2676
 EP type number : 9 410 230 023
 Governor
 Governor design. : RSV600...1100A2C2161
 -5L
 Governor no. : 0 420 232 495

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466AZ-02

1st version kW : 130.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

MD6

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 11.1...11.3

100 s: (10.9...11.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 111.0...113.0

1000 : (109.0...115.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 9.10
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1195...1205
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 600
Rack travel in mm : 3.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 600
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 670...730

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.10...10.20
2nd speed rpm : 950
Rack travel in m: 10.70...10.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 95
Rack travel mm : 9.00...9.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.20...8.40
2nd pressure hPa : 145
Rack travel in m: 9.80...10.20
3rd pressure hPa : 700
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 950
Del.quantity cm³/ : 119.0...122.0
1000 s: (116.5...124.5)
Aneroid pressure h: -
Speed rpm : 500

M07

Del.quantity cm³/ : 68.0...72.0
1000 s: (66.0...74.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 600
Rack travel in mm : 4.20...4.40
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE32396

Setting without torque-control spring
retainer with 1 mm control-rod travel
less. Raising of full-load delivery
with torque-control spring retainer to
10.1 mm control-rod travel.

Start-of-delivery mark = 15.5° after
start of delivery cyl. 1.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h15
Edition : 17.05.90
Replaces : 2.5.90
Test oil : ISO-4113

Combination no. : 0 400 876 371

Injection pump
Pump designation : PES6A100D410RS2676-1
EP type number : 9 410 230 024
Governor
Governor design. : RSV450...1050AOC2204
-6L
Governor no. : 0 420 232 539

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466AT13

1st version kW : 120.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

MD8

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.10...10.20

Del.quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 450.0
Rack travel in mm : 5.4...5.6
Del.quantity cm³/ : 1.7...2.1
100 s: (1.5...2.3)
Spread cm³ : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 101.5...103.5
1000 : (99.5...105.5)
Spread cm³ : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 35...43

Testing:

1st rack travel in: 9.10
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1180...1190
3rd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 450
Rack travel in mm : 5.40...5.60

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 10.10...10.20
2nd speed rpm : 650
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 112.0...116.0
1000 s: (110.0...118.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.10
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 450
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 17.5...21.5
1000 s: (15.5...23.5)

Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE44344
Start-of-delivery mark at control-rod
travel 10.5 mm and 15° after start of
delivery.

Starting/full-load transition speed
from holding magnet = 450 1/min.

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 876 395

Injection pump
Pump designation : PES6A100D410RS2676
EP type number : 9 410 230 023
Governor
Governor design. : RSV425...1100A2C2161
-1L
Governor no. : 9 420 234 133

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466T

1st version kW : 120.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

M10

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 2.0...2.4
100 s: (1.8...2.6)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 98.5...100.5

1000 : (96.5...102.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.40...9.40
2nd speed rpm : 750
Rack travel in m: 10.60...10.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.60...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 80
Rack travel in m: 9.40...9.80
3rd pressure hPa : 175
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 116.0...119.0
1000 s: (114.0...121.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 86.0...90.0
1000 s: (84.0...92.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 20.5...24.5
1000 s: (18.5...26.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE23746

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark = 15.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 y1
 Edition : 18.12.91
 Replaces : 10.85
 Test oil : ISO-4113
 Combination no. : 0 401 846 512
 Injection pump
 Pump designation : PE6P120A32ORS415-1
 EP type number : 0 411 826 123
 Governor
 Governor design. : RQ250/1100PA417R
 Governor no. : 0 421 801 084

Customer-spec. information
 Customer : DAF

Engine : DKX 1160

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00

M12

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 11.60...11.70
 Del. quantity cm³/ : 18.7...18.9
 100 s: (18.4...19.2)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 250.0
 Rack travel in mm : 6.7...6.9
 Del. quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 700
 Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 700
 Del. quantity : 187.0...189.0
 1000 : (184.0...192.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 700
 Rack travel in mm : 16.0

Testing:
 1st rack travel in: 10.60
 Speed rpm : 1125...1140
 2nd rack travel in: 4.00
 Speed rpm : 1190...1220
 4th rack travel in: 1300
 Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack travel: 7.40

Speed rpm : 250

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 450...490

TORQUE CONTROL

Dimension a mm : 0.55

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.60...12.70

2nd speed rpm : 1080

Rack travel in m: 12.50...12.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 300

Rack travel in m: 11.30...11.40

3rd pressure hPa : 250

Rack travel in m: 10.60...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 140.0...142.0

1000 s: (137.0...145.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1125...1140

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 305.0...345.0

1000 s: (305.0...345.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.40...6.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 9,7 f 1
 Edition : 24.02.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 554
 Injection pump
 Pump designation : PE6P110A72ORS516
 EP type number : 0 411 816 176
 Governor
 Governor design. : RQ300/1100PA412-2
 Governor no. : 0 421 801 435

Customer-spec. information
 Customer : STEYR

Engine : WD615.64

1st version kW : 175.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00

M14

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 14.2...14.4

100 s: (13.9...14.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.9...2.4

100 s: (1.6...2.6)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 142.0...144.0

1000 : (139.0...147.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1245...1275

4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.25
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.40...14.50
2nd speed rpm : 700
Rack travel in m: 15.60...15.80
3rd speed rpm : 1000
Rack travel in m: 14.60...14.80
4th speed rpm : 860
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 15.60...15.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.90...13.10
2nd pressure hPa : 575
Rack travel in m: 15.00...15.10
3rd pressure hPa : 310
Rack travel in m: 13.60...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 160.0...164.0
1000 s: (157.0...167.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 116.0...118.0
1000 s: (113.0...121.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...195.0
1000 s: (171.0...199.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 19.0...24.0
1000 s: (16.5...26.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 a1
 Edition : 29.04.91
 Replaces : 02.10.89
 Test oil : ISO-4113
 Combination no. : 0 401 846 826
 Injection pump
 Pump designation : PE6P120A32ORS3178
 EP type number : 0 411 826 752
 Governor
 Governor design. : RQV250...1025PA657-10
 Governor no. : 0 421 813 567

Customer-spec. information
 Customer : VOLVO

Engine : TD122FS

1st version kW : 287.0
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 14.00...14.10
 Del.quantity cm³/ : 25.2...25.4
 100 s: (24.9...25.7)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.8...5.1
 Del.quantity cm³/ : 1.8...2.3
 100 s: (1.5...2.5)
 Spread cm³ : 0.5
 100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40
 2nd speed rpm : 450
 travel mm : 3.60...4.20
 3rd speed rpm : 800
 travel mm : 6.30...6.70
 4th speed rpm : 1070
 travel mm : 8.00...8.20
 5th speed rpm : 1150
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1090
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700

Aneroid pressure h: 1200
Del.quantity : 252.0...254.0
1000 : (249.0...257.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:
1st rack travel in: 13.00
Speed rpm : 1055...1065
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 6...14

Testing:
Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 250
Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.00...14.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 120
Rack travel in m: 10.20...10.30
3rd pressure hPa : 810
Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700

Del.quantity cm³/ : 163.0...165.0
1000 s: (160.0...168.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1055...1065

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.10
Del.quantity cm³/ : 18.0...23.0
1000 s: (15.5...25.5)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 d
 Edition : 29.11.91
 Replaces : 22.3.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 900
 Injection pump
 Pump designation : PE6P120A32ORS3240
 EP type number : 0 411 826 786
 Governor
 Governor design. : RQV250...1025PA921
 -16
 Governor no. : 0 421 813 799

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD122FL

1st version kW : 298.0
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 25.1...25.3
 100 s: (24.8...25.6)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 6.5...6.7
 Del.quantity cm3/ : 1.7...2.2
 100 s: (1.5...2.5)
 Spread cm3 : 0.5
 100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40
 2nd speed rpm : 450
 travel mm : 3.60...4.20
 3rd speed rpm : 800
 travel mm : 6.30...6.70
 4th speed rpm : 1070
 travel mm : 8.00...8.20
 5th speed rpm : 1150
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1100
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700

Aneroid pressure h: 1200
Del.quantity : 251.0...253.0
1000 : (248.0...256.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.60
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 60...68

Testing:
Speed rpm : 100
Minimum rack travel: 8.10
Speed rpm : 250
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.60...13.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 90
Rack travel in m: 10.10...10.20
3rd pressure hPa : 800
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700

Del.quantity cm³/ : 154.0...156.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.50...6.70
Del.quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 k
 Edition : 29.11.91
 Replaces : 23.10.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 961
 Injection pump
 Pump designation : PE6P120A320RS3292
 EP type number : 0 411 826 804
 Governor
 Governor design. : RQV300...1050PA1020
 Governor no. : 0 421 813 976

Customer-spec. information
 Customer : VME

Engine : TD122 GH 3049

1st version kW : 207.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 3.3...3.8

100 s: (3.0...4.0)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.30...1.70

2nd speed rpm : 450
 travel mm : 2.40...3.00

3rd speed rpm : 700
 travel mm : 4.30...4.90

4th speed rpm : 1100
 travel mm : 7.80...8.00

5th speed rpm : 1200
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 205.0...207.0
1000 : (202.0...210.0)
Spread cm3 : 5.00
1000 : (9.00)

PATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 10.60
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 88...96

Testing:
Speed rpm : 100
Minimum rack trave: 7.60
Speed rpm : 300
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION
Speed rpm : 300...420

TORQUE CONTROL
Dimension a mm : 1.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.60...11.70
2nd speed rpm : 550
Rack travel in m: 12.90...13.10
3rd speed rpm : 650
Rack travel in m: 12.60...12.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.90...13.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.90
2nd pressure hPa : 530
Rack travel in m: 11.80...11.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 550
Del.quantity cm3/ : 243.0...249.0
1000 s: (240.0...252.0)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 208.0...210.0
1000 s: (205.0...213.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...190.0
1000 s: (156.0...194.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 33.0...38.0
1000 s: (30.5...40.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 846 964

Injection pump
Pump designation : PE6P110A320RS3302
EP type number : 0 411 816 181
Governor
Governor design. : RQ300/1000PA1012-1
Governor no. : 0 421 801 648

Customer-spec. information
Customer : DAF

Engine : LT 195 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 089

Outside diameter
x Wall thickness : 8.00X2.50X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 14.00...15.00

M22

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10
& maximum rack tra: 13.9...14.9
Difference ° CS : 3.00...5.00

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 17.3...17.5

100 s: (17.0...17.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.6...2.1

100 s: (1.4...2.4)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 173.0...175.0

1000 : (170.5...177.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40
Speed rpm : 1025...1040
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 15.10...15.20
2nd speed rpm : 1000
Rack travel in m: 15.00...15.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.40...14.50

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 530
Rack travel in m: 13.90...14.00
3rd pressure hPa : 380
Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 131.0...133.0
1000 s: (128.5...135.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1025...1040

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...370.0
1000 s: (327.0...373.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 16.5...21.5
1000 s: (14.0...24.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MM 17,6 b1
Edition : 30.04.92
Replaces : 10.83
Test oil : ISO-4113

Combination no. : 0 401 870 070

Injection pump
Pump designation : PE12P110A520/5RS4C8
EP type number : 0 411 810 039
Governor
Governor design. : RSUV300...1150POA324
DR
Governor no. : 0 421 831 008

Customer spec. information
Customer : MM

Engine : D,DT,TBD232V12

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
11- 2- 3- 10- 7- 6

Phasing : 0-30-60-90-120-150-
180-210-240-270-300-
330

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 13.6...13.9
100 s: (13.3...14.1)

Spread cm3 : 0.4
100 s: (0.7)

2nd speed rpm : 300.0
Rack travel in mm : 7.2...7.4
Del.quantity cm3/ : 2.3...2.9
100 s: (2.0...3.1)

Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity : 136.0...139.0
1000 : (133.5...141.5)

Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel mm : 11.20
Speed rpm : 1190...1200

2nd rack travel in: 4.00
Speed rpm : 1235...1265

4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.8

Speed rpm : 300

Rack travel in mm : 6.70...6.90

Rack travel in mm : 2.00

Speed rpm : 320...380

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1190...1200

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 876 791B
Injection pump
Pump designation : PE6P110A32OLS3859
EP type number : 0 411 816 784
Governor
Governor design. : RSV400...900P1A554
Governor no. : 0 421 833 376

Cust. part no. : 9273092

Customer-spec. information
Customer : LIEBHERR

Engine : D 9306 TI

1st version kW : 230.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 6- 3- 5- 2- 4

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.50...14.60

Del.quantity cm³/ : 19.5...19.7

100 s: (19.2...19.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 400.0
Rack travel in mm : 5.9...6.1
Del.quantity cm³/ : 1.2...1.7
100 s: (0.9...1.9)
Spread cm³ : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1300
Del.quantity : 195.0...197.0
1000 : (192.5...199.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 96...102

Testing:

1st rack travel in: 13.50
Speed rpm : 930...940
2nd rack travel in: 4.00
Speed rpm : 980...1020
3rd rack travel in: 4.00
Speed rpm : 1020...1040
4th rack travel in: 1260
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 74...80
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 450...510

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1300
Rack travel mm : 14.50...14.60

Measurement

Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 13.70...13.80
2nd pressure hPa : 710
Rack travel in m: 14.00...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 177.5...179.5
1000 s: (175.0...182.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 930...940

STARTING FUEL DELIVERY

Speed rpm : 100

M27

Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 12.0...17.0
1000 s: (9.5...19.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 7,7 b
 Edition : 30.04.92
 Replaces : 10.91
 Test oil : ISO-4113
 Combination no. : 0 402 046 343
 Injection pump
 Pump designation : PES6P120A720RS3275
 EP type number : 0 412 026 745
 Governor
 Governor design. : RQV300...1100PA954-1
 K
 Governor no. : 0 421 815 273
 Customer spec. information
 Customer : IVECO-UNIC
 Engine : 8360.46.016

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 11.50...11.60
 Del.quantity cm3/ : 18.3...18.5
 100 s : (18.0...18.8)
 Spread cm3 : 0.5
 100 s : (0.9)
 2nd speed rpm : 325.0
 Rack travel in mm : 4.2...4.6
 Del.quantity cm3/ : 2.0...2.6
 100 s : (1.7...2.9)
 Spread cm3 : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
 travel mm : 10.60...10.80
 2nd speed rpm : 300
 travel mm : 1.00...1.40
 3rd speed rpm : 850
 travel mm : 6.60...7.00
 4th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1000
 Del.quantity : 183.0...185.0
 1000 : (180.0...188.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 115...123

Testing:

1st rack travel in: 10.10

Speed rpm : 1170...1180

2nd rack travel in: 4.00

Speed rpm : 1225...1255

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 73...81

Testing:

Speed rpm : 100

Minimum rack travel: 5.90

Speed rpm : 325

Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 320...440

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 11.50...11.60

2nd speed rpm : 1100

Rack travel in m: 11.00...11.20

3rd speed rpm : 700

Rack travel in m: 10.90...11.10

4th speed rpm : 350

Rack travel in m: 9.00...9.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 900

Pressure hPa : 1000

Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 8.40...8.60

2nd pressure hPa : 550

Rack travel in m: 10.40...10.50

3rd pressure hPa : 320

Rack travel in m: 9.10...9.30

START CUT-OUT

Speed 1/min : 275 (295)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1100

Del.quantity cm3/ : 170.0...176.0

1000 s: (167.0...179.0)

Aneroid pressure h: 1000

Speed rpm : 700

Del.quantity cm3/ : 164.0...170.0

1000 s: (161.0...173.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 95.0...97.0

1000 s: (92.0...100.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 100.0...120.0

1000 s: (96.0...124.0)

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.20...4.60

Del.quantity cm3/ : 20.0...26.0

1000 s: (17.0...29.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 1
Edition : 30.04.92
Replaces : 08.90
Test oil : ISO-4113
Combination no. : 0 402 076 722
Injection pump
Pump designation : PES6P120A72GRS3205
EP type number : 0 412 026 728
Governor
Governor design. : RSV400...1100P2A534
Governor no. : 0 421 833 275

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 HF

1st version kW : 205.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 12.50...12.60
Del.quantity cm³/ : 16.8...17.0

100 s: (16.6...17.2)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.2...5.4
Del.quantity cm³/ : 2.0...2.4
100 s: (1.8...2.6)

Spread cm³ : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del.quantity : 168.0...170.0
1000 : (166.0...172.0)
Spread cm³ : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 36...44

Testing:

1st rack travel in: 11.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1195
3rd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.8

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.70...4.90

TORQUE CONTROL
Torque control curve -- 1st version
1st speed rpm : 1100
Rack travel in m: 12.50...12.60
2nd speed rpm : 750
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.70...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : 585
Rack travel in m: 11.10...11.20
2nd pressure hPa : 770
Rack travel in m: 12.20...12.60
3rd pressure hPa : 1200
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 174.5...178.5
1000 s: (172.5...180.5)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 117.5...121.5
1000 s: (114.5...124.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 20.0...24.0
1000 s: (18.0...26.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:
: JOHN DEERE # RE32035

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 g
Edition : 30.04.92
Replaces : 11.90
Test oil : ISO-4113

Combination no. : 0 402 076 730

Injection pump
Pump designation : PES6P110A720RS3217
EP type number : 0 412 016 724
Governor
Governor design. : RSV550...1050P2A534-3
Governor no. : 0 421 833 304

Customer-spec. information
Customer : JOHN DEERE

Engine : 6619AT07

1st version kW : 205.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 103

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

NO4

Prestroke mm : 3.45...3.55
: (3.40...3.60)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.10...12.20

Del.quantity cm³/ : 18.3...18.5

100 s: (18.1...18.8)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 550.0
Rack travel in mm : 5.2...5.4
Del.quantity cm³/ : 3.3...3.7
100 s: (3.1...3.9)
Spread cm³ : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 900
Del.quantity : 183.5...185.5
1000 : (181.0...188.0)
Spread cm³ : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 41...49

Testing:

1st rack travel in: 11.10
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1180...1190
3rd rack travel in: 4.00
Speed rpm : 1195...1215
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 550
Rack travel in mm : 5.20...5.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 295
Rack travel in m: 11.00...11.10
3rd pressure hPa : 510
Rack travel in m: 11.70...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 167.0...171.0
1000 s: (165.0...173.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1095...1105

N05

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (175.0...205.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 33.0...37.0
1000 s: (31.0...39.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE36078

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 076 745

Injection pump
Pump designation : PES6P120A72ORS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV625...1100P2A534-9
Governor no. : 0 421 833 372

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 HZ 031

1st version kW : 205.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

NO6

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 12.70...12.80
Del.quantity cm3/ : 17.4...17.6
100 s : (17.2...17.8)
Spread cm3 : 0.4
100 s : (0.6)

2nd speed rpm : 625.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 2.7...3.1
100 s : (2.5...3.3)
Spread cm3 : 0.6
100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del.quantity : 174.5...176.5
1000 : (172.5...178.5)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 39...47

Testing:

1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 625
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 625
Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.70...12.80
2nd speed rpm : 700
Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.50...11.70
2nd pressure hPa : 645
Rack travel in m: 12.10...12.20
3rd pressure hPa : 840
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

NO7

Del.quantity cm³/ : 143.0...147.0
1000 s: (141.0...149.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 625
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 27.0...31.0
1000 s: (25.0...33.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47399

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 c 2
 Edition : 30.04.92
 Replaces : 06.91
 Test oil : ISO-4113
 Combination no. : 0 402 640 828
 Injection pump
 Pump designation : PE12P120A520LS7826
 EP type number : 0 412 620 817
 Governor
 Governor design. : RQV350...1050PA870
 -13
 Governor no. : 0 421 813 934

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 620.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 27.4...27.6

100 s: (27.1...27.9)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80

2nd speed rpm : 570
 travel mm : 3.30...3.80

3rd speed rpm : 900
 travel mm : 5.40...5.90

4th speed rpm : 1107
 travel mm : 7.80...8.30

5th speed rpm : 1204
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1800
Del.quantity : 274.0...276.0
1000 : (271.0...279.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 114...122

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 59...67

Testing:

Speed rpm : 250
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.20...8.50

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.60...9.70
2nd pressure hPa : 1100
Rack travel in m: 13.80...14.10

START CUT-OUT

Speed 1/min : 310 (330)

N09

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 750
Del.quantity cm3/ : 271.0...275.0
1000 s: (268.0...278.0)
Spread cm3 : 10.00
1000 s: (15.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm3 : 10.00
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 9,7 d
Edition : 30.04.92
Replaces : 09.86
Test oil : ISO-4113

Combination no. : 0 402 646 830

Injection pump
Pump designation : PE6P120A72ORS7118
EP type number : 0 412 626 811
Governor
Governor design. : RG300/110CPA784
Governor no. : 0 421 801 337

Customer-spec. information
Customer : STEYR

Engine : WD615.68

1st version kW : 228.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.5...4.7

Del.quantity cm³/ : 1.5...2.1

100 s: (-)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 181.0...183.0

1000 : (178.0...186.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.70

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.40
2nd pressure hPa : 570
Rack travel in m: 12.10...12.20
3rd pressure hPa : 360
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 190.0...196.0
1000 s: (187.0...199.0)
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 143.0...145.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 225.0...265.0
1000 s: (-)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 9,7 d 1
Edition : 30.04.92
Replaces : 09.86
Test oil : ISO-4113

Combination no. : 0 402 646 831

Injection pump
Pump designation : PE6P120A720RS7118
EP type number : 0 412 626 811
Governor
Governor design. : RQV250...1100PA785
Governor no. : 0 421 813 517

Customer-spec. information
Customer : STEYR

Engine : WD615.68

1st version kW : 228.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.5...2.1

100 s: (-)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.20...1.30

2nd speed rpm : 350
travel mm : 1.80...2.20

3rd speed rpm : 410
travel mm : 2.30...2.70

4th speed rpm : 1150
travel mm : 8.40...8.60

5th speed rpm : 1240
travel mm : 9.50...9.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 181.0...183.0
1000 : (178.0...186.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 102...110

Testing:

1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 250
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 275...375

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 570
Rack travel in m: 12.10...12.20
3rd pressure hPa : 360
Rack travel in m: 10.80...11.00

START CUT-OUT

Speed 1/min : 170 (195)

FUEL DELIVERY CHARACTERISTICS

1st version

N13

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 190.0...196.0
1000 s: (187.0...199.0)
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 225.0...265.0
1000 s: (221.0...269.0)
Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 r
Edition : 30.04.92
Replaces : 05.91
Test oil : ISO-4113

Combination no. : 0 402 646 887

Injection pump
Pump designation : PE6P120A72DRS7188
EP type number : 0 412 626 832
Governor
Governor design. : RQV200...950PA725-7
Governor no. : 0 421 813 803

Customer-spec. information
Customer : SCANIA

Engine : DSC 11 23

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 104

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 13.80...13.90
Del.quantity cm3/ : 25.1...25.3
100 s: (24.8...25.6)

Spread cm3 : 0.8
100 s: (1.2)

2nd speed rpm : 250.0
Rack travel in mm : 4.6...5.0
Del.quantity cm3/ : 1.4...2.0
100 s: (-)
Spread cm3 : 0.4
100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
travel mm : 1.20...1.60
2nd speed rpm : 350
travel mm : 2.40...3.00
3rd speed rpm : 650
travel mm : 4.50...5.10
4th speed rpm : 1045
travel mm : 8.40...8.60
5th speed rpm : 1125
travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1500
Del.quantity : 251.0...253.0
1000 : (248.0...256.0)

Spread cm3 : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 12.80
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 125
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 350...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 13.80...13.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.60
2nd pressure hPa : 440
Rack travel in m: 12.00...12.10
3rd pressure hPa : 270
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 950
Del.quantity cm3/ : 228.0...236.0
1000 s: (226.0...238.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 152.0...154.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...180.0
1000 s: (-)
Rack travel in mm : 10.20...10.60

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,1 c
Edition : 30.04.92
Replaces : 01.92
Test oil : ISO-4113

Combination no. : 0 402 646 921

Injection pump
Pump designation : PE6P120A32DLS7837-10
EP type number : 0 412 626 855
Governor
Governor design. : RQ300/1050PA972-3
Governor no. : 0 421 801 565

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 9.80...10.00
2nd pressure hPa : 600
Rack travel in m: 13.70...13.90
3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1400
Rack travel in m: 15.20...15.40
5th pressure hPa : -
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 1050

Del.quantity cm3/ : 235.0...238.0
1000 s: (232.0...241.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm3/ : 248.0...252.0
1000 s: (245.0...255.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 60.0...90.0
1000 s: (56.0...94.0)
Rack travel in mm : 9.10...9.40

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 h2
 Edition : 29.11.91
 Replaces : 8.10.91
 Test oil : ISO-4113

Combination no. : 0 402 646 947

Injection pump
 Pump designation : PE6P130A72ORS7225
 EP type number : 0 412 636 817
 Governor
 Governor design. : RQV300...950PA1002
 -1K
 Governor no. : 0 421 815 280

Customer spec. information
 Customer : IVECO-UNIC

Engine : 8210.42.400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 13.50...14.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 30.6...30.9
 100 s: (30.2...31.2)

Spread cm³ : 0.6
 100 s: (1.0)

2nd speed rpm : 300.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm³/ : 1.9...2.5
 100 s: (1.5...2.9)

Spread cm³ : 1.0
 100 s: (1.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 8.50...8.70

2nd speed rpm : 300
 travel mm : 1.00...1.40

3rd speed rpm : 500
 travel mm : 3.30...3.90

4th speed rpm : 750
 travel mm : 5.80...6.20

5th speed rpm : 1300
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1125
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 950
 Aneroid pressure h: 900
 Del.quantity : 306.0...309.0
 1000 : (302.5...312.5)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 12.80
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...74

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 340...460

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.80...13.90
2nd speed rpm : 750
Rack travel in m: 13.70...13.90
3rd speed rpm : 500
Rack travel in m: 12.50...12.70
4th speed rpm : 300
Rack travel in m: 12.10...12.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 950
Pressure hPa : 900
Rack travel mm : 13.80...13.90

Measurement
Speed 1/min : 950

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 560
Rack travel in m: 12.60...12.70
3rd pressure hPa : 350

Rack travel in m: 10.80...11.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 500
Del.quantity cm³/ : 273.0...279.0
1000 s: (266.5...282.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 195.0...198.0
1000 s: (191.5...201.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.80
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...170.0
1000 s: (136.0...174.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 19.0...25.0
1000 s: (15.0...29.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 976

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/1050PA1031
Governor no. : 0 421 801 642

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.70...13.90

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : -

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8

Testing:

Speed rpm : 200
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 6.50...7.10
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.40...13.60
2nd speed rpm : 850
Rack travel in m: 13.70...13.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 700
Pressure hPa : -
Rack travel mm : 10.80...11.00

Measurement

Speed 1/min : 700

1st pressure hPa : 300
Rack travel in m: 11.30...11.50
2nd pressure hPa : 700
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1090...1105

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 978

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/950PA1031-1
Governor no. : 0 421 801 643

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.70...13.90

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : ?

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.80
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8

Testing:
Speed rpm : 200
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 6.50...7.10
Rack travel in mm : 2.00
Speed rpm : 390...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 700
Pressure hPa : -
Rack travel mm : 10.80...11.00

Measurement
Speed 1/min : 700

1st pressure hPa : 300
Rack travel in m: 11.30...11.50
2nd pressure hPa : 700
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

N23

1st version
1mm rack travel less than
full load rack tr: 12.80
Speed rpm : 990...1005

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 5,8 D
Edition : 30.04.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 403 444 119

Injection pump
Pump designation : PES4MW100/320RS1199
EP type number : 0 413 404 112
Governor
Governor design. : RQV300...1300MW110K
Governor no. : 0 420 083 996

Customer spec. information
Customer : PERKINS

Engine : 110 TI

1st version kW : 82.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.30...3.40
: (3.25...3.45)
Rack travel in mm : 12.00...14.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 10.00...10.40

2nd speed rpm : 900

travel mm : 6.40...6.60

3rd speed rpm : 480

travel mm : 3.10...3.70

4th speed rpm : 300

travel mm : 1.40...1.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 900

Del.quantity : 124.0...126.0

1000 : (122.0...128.0)

Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 330...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300
Rack travel in m: 13.00...13.10
2nd speed rpm : 800
Rack travel in m: 12.00...12.20
3rd speed rpm : 500
Rack travel in m: 10.30...10.50
4th speed rpm : 1000
Rack travel in m: 12.40...12.70
5th speed rpm : 400
Rack travel in m: 9.90...10.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1300
Pressure hPa : -
Rack travel mm : 9.60...9.70

Measurement

Speed 1/min : 1300

1st pressure hPa : 130

N25

Rack travel in m: 9.80...9.90
2nd pressure hPa : 180
Rack travel in m: 10.80...11.10
3rd pressure hPa : 900
Rack travel in m: 13.00...13.10

START CUT-OUT

Speed 1/min : 240 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm3/ : 118.0...121.0
1000 s: (115.5...123.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 80.0...90.0
1000 s: (77.0...93.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery blocking 46.5°
before start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 8,1 D
Edition : 18.09.91
Replaces : 06.91
Test oil : ISO-4113

Combination no. : 0 403 446 249

Injection pump
Pump designation : PES6MW100/720RS1197
EP type number : 0 413 406 185
Governor
Governor design. : RQV325...1350MW109K
Governor no. : 0 420 083 997

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8060.45.6000

1st version kW : 169.0
Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300 .

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 7.7...7.9

Del.quantity cm³/ : 2.5...2.9

100 s: (2.2...3.1)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
travel mm : 10.00...10.40

2nd speed rpm : 825
travel mm : 4.90...5.10

3rd speed rpm : 400
travel mm : 2.90...3.50

4th speed rpm : 325
travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h: 850

Del.quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 117...125

Testing:

1st rack travel in: 13.00
Speed rpm : 1410...1420
2nd rack travel in: 4.00
Speed rpm : 1515...1545
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.8

Testing:

Speed rpm : 200
Minimum rack travel: 10.00
Speed rpm : 325
Rack travel in mm : 7.70...7.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1350
Rack travel in m: 14.00...14.10
2nd speed rpm : 1200
Rack travel in m: 13.60...13.80
3rd speed rpm : 1000
Rack travel in m: 13.20...13.50
4th speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 11.70...11.80
2nd pressure hPa : 650
Rack travel in m: 12.80...13.10
3rd pressure hPa : 850
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 850
Speed rpm : 1200

Del.quantity cm3/ : 100.0...103.0
1000 s: (97.5...105.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 850
Speed rpm : 1000
Del.quantity cm3/ : 100.5...103.5
1000 s: (98.0...106.0)
Aneroid pressure h: 850
Speed rpm : 700
Del.quantity cm3/ : 101.5...104.5
1000 s: (99.0...107.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 77.5...79.5
1000 s: (75.5...81.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1410...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...85.0
1000 s: (62.0...88.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.70...7.90
Del.quantity cm3/ : 25.0...29.0
1000 s: (22.5...31.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks: